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2005-0336-F

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2005-0336-F

FOIA MARKER

**This is not a textual record. This is used as an
administrative marker by the George Bush Presidential
Library Staff.**

Record Group/Collection: George H.W. Bush Presidential Records
Collection/Office of Origin: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: General Science Files

OA/ID Number: 62034
Folder ID Number: 62034-006

Folder Title:
Industrial: General [6 of 7] [1991]

Stack:

Row:

Section:

Shelf:

Position:

0

0

0

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"CORRESPONDENCE TRACKING"

TYPE: ACTION/CABINET MEMBER DOCUMENT NUMBER: 9121797
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS

FROM: MOSBACHER, Robert A.: THE SECRETARY OF COMMERCE

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 06/17/91

SUBJECT: RE: OVERSEAS COMMERCE DEPARTMENT TECHNOLOGY
ATTACHES. ACCEPTANCE OF OSTP'S OFFER TO PREPARE A
COMPREHENSIVE "THINK PIECE" OUTLINING HOW TO
PROCEED.

DIRECTORATE STAFF
ASSIGNED: INDUSTRIAL ASSIGNED:

ACTION
REQUIRED: FOR DAB SIGNATURE

STAFF
ACTION:

SENDER'S DUE DATE:
OSTP DUE DATE: 07/25/91
DATE COMPLETED: STAFF DUE DATE
DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley
Ken Yale
INTERNATIONAL/POLICY

WHITE HOUSE TRACKING #: CONTACT PERSON:
REMARKS: PHONE: EXT:

CLOSED

OSTP RECEIVED: 07/19/91
DEPT RECEIVED: FILE: *Industrial* CABINET MEMBER*TECHNOLOGY

THE WHITE HOUSE
WASHINGTON

June 26, 1991

Dear Bob,

Thank you for responding so positively to my letter on developing a system of technology attaches. As promised, I have enclosed the short think piece that my staff has prepared. I hope you find it useful in developing your thoughts on the question.

Tom Ratchford and Bill Phillips, two of my Associate Directors, are available to meet with Mike Farren and Bob White, and any others at Commerce you deem appropriate, to discuss the matter in greater detail. My staff will be contacting yours shortly to set up a mutually convenient meeting.

I look forward to hearing what our colleagues develop from this proposal.

Sincerely,



D. Allan Bromley
The Assistant to the President
for
Science and Technology

The Honorable Robert Mosbacher
U.S. Department of Commerce
Washington, D.C. 20230

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01. Report	Establishing a US Technology Attache System (6 pp.)		(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: General Science Files
WHORM Cat.:
File Location: Industrial: General [6 of 7] [1991]

Date Closed:	3/10/2010	OA/ID Number:	62034-006
FOIA/SYS Case #:	2005-0336-F	Appeal Case #:	
Re-review Case #:		Appeal Disposition:	
P-2/P-5 Review Case #:		Disposition Date:	
AR Case #:		MR Case #:	
AR Disposition:		MR Disposition:	
AR Disposition Date:		MR Disposition Date:	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
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(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION

DOCUMENT NUMBER: 9121739

ORIGINATOR: 02

STATUS C

DIRECTORATE STATUS

FROM: GOOD, Mary L.: ALLIED SIGNAL

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 06/10/91

SUBJECT: LETTER TO DR. JAMES C. MCGRODDY REGARDING HOW TO
BETTER COORDINATE THEIR WORK ON THE JHLAP GROUP, IN
PARTICULAR, CONVERSATIONS WITH DR. BROMLEY.

DIRECTORATE STAFF
ASSIGNED: ASSIGNED:

ACTION STAFF
REQUIRED: ACTION:

SENDER'S DUE DATE:
OSTP DUE DATE: STAFF DUE DATE
DATE COMPLETED: DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley
INDUSTRIAL

WHITE HOUSE TRACKING #: CONTACT PERSON:
PHONE: EXT:
REMARKS:

OSTP RECEIVED: 06/14/91
DEPT RECEIVED:

FILE: INDUSTRIAL



9121739

RECEIVED

Allied-Signal Inc.
P.O. Box 1021R
Morristown, NJ 07962-1021
Telephone (201) 455-4729

Fax: (201) 455-2956

Mary L. Good
Sr. Vice President
Technology

91 JUN 14 A10:25

OFFICE OF THE
DIRECTOR

June 10, 1991

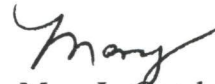
Dr. James C. McGroddy
IBM Corporation
Research Division
T. J. Watson Research Center
Yorktown Heights, NY10598

Dear Jim:

I very much appreciated your FAX of June 3 setting out how we might better coordinate our work on the JHLAP group. I wholeheartedly agree with your approach to the problem and I appreciate your taking the time and effort to put your thoughts on paper. I particularly believe that it is important for the Panel to have some conversations with Allan Bromley so we have a better idea of what our objectives are in this whole enterprise.

I appreciated and enjoyed your participation in the last meeting in Hakone. I look forward to the opportunity of visiting with you soon.

Sincerely,


Mary L. Good

MLG/jr

cc: Mr. J. P. McTague
Dr. Orville Bentley
Dr. Allan Bromley
Prof. James Gibbons
Dr. John Hulm
Mr. Richard Messinger
Dr. Howard Simmons
Dr. Robert White

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION DOCUMENT NUMBER: 9121686
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS

FROM: WEINERT, Donald G.: NATIONAL SOCIETY FOR PROFESSIONAL ENGINEERS

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 05/23/91

SUBJECT: LETTER TO DR. PHILLIPS EXPRESSING APPRECIATION FOR
HIS PARTICIPATION IN THE RECENT IAG MEETING.

DIRECTORATE STAFF
ASSIGNED: ASSIGNED:

ACTION STAFF
REQUIRED: ACTION:

SENDER'S DUE DATE:
OSTP DUE DATE: STAFF DUE DATE
DATE COMPLETED: DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley
INDUSTRIAL

WHITE HOUSE TRACKING #: CONTACT PERSON:
PHONE: EXT:
REMARKS:

OSTP RECEIVED: 06/10/91 FILE: INDUSTRIAL
DEPT RECEIVED:

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS



9/21/86
Lln Bromley
RECEIVED

91 JUN 10 P2:44

May 23, 1991

OFFICE OF THE
DIRECTOR

Mr. William D. Phillips
Associate Director for Industrial
Technology
Office of Science and Technology
Policy
Executive Office of the President
Old Executive Building #432
Washington, D.C. 20506

Dear Bill:

On behalf of NSPE President Neil Norman and all of the members of the National Society of Professional Engineers (NSPE) Industry Advisory Group (IAG), I want to express appreciation for your participation in the recent IAG meeting at the Four Seasons Resort and Hotel. The information you presented was comprehensive in scope and detailed in content. You were also very candid and responsive in answering questions and in the lengthy discussions which followed your presentation. It was clear from the response of the IAG members that your presentation stimulated their interest and was greatly appreciated by all.

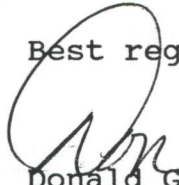
As you recall, during your presentation you discussed the OSTP Report on Critical Technologies. You indicated OSTP was seeking input and that we could get a copy of the report. If that is possible, we would very much appreciate your sending us a copy. Also, you indicated it would be possible to get copies of all of the Vu graph slides you had with you. I will ask my Administrative Assistant, Polly Collins, to follow up with your office.

Looking to the future, there was discussion of the possibility of the Industry Advisory Group acting as a sounding board for the OSTP sponsored Critical Technologies Institute and as a source for identification of problems and opportunities related to critical technologies. We would like to follow up on that idea with you and develop a means whereby the IAG can be useful to OSTP in that role. Please let me know if you wish to discuss it further.

Mr. William D. Phillips
May 23, 1991
Page Two

Again, thanks for your excellent contribution to the Industry
Advisory Group meeting.

Best regards,

A handwritten signature in dark ink, appearing to be 'D. Weinert', is written over the typed name.

Donald G. Weinert, P.E.
Executive Director

DGW:gl

cc: Dr. Bromley

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION

DOCUMENT NUMBER: 9121458

FROM: MACLACHLAN, Alexander: DU PONT RESEARCH AND DEVELOPMENT

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 05/14/91

SUBJECT: A THANK YOU FOR YOUR COMMENTS AT THE LAVOISIER MEDAL
CEREMONY, AND A CONTINUING REQUEST TO VISIT THEIR
RESEARCH FACILITIES IN WILMINGTON.

ASSIGNED TO:

ACTION REQUIRED:

SENDER'S DUE DATE:

OSTP DUE DATE:

DATE COMPLETED: -----

COPIES TO: D. Allan Bromley
Steve Olson
INDUSTRIAL

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS:

DATE RECEIVED: 05/17/91

FILE: INDUSTRIAL*THANK YOU



DU PONT RESEARCH AND DEVELOPMENT
Wilmington, DE 19898

SENIOR VICE PRESIDENT

RECEIVED

91 MAY 17 A 9:08

May 14, 1991

OFFICE OF THE
DIRECTOR

Dr. Allan D. Bromley
Office of Science Technology & Policy
Executive Office of the President
17th & Pennsylvania Avenues N.W.
Washington, DC 20506

Dear Allan:

All of us in Du Pont are most appreciative of your outstanding comments at our Lavoisier Medal ceremony. Your clear understanding of the major technological competitive issues facing our country was constantly evident and reassuring to those of us who are concerned. It's important for us to feel our top government officials are getting such good council.

As a member of one of the few U.S. industries that still has a strong balance of trade, we nevertheless worry about our future and the future of U.S. industries already in trouble. The list of critical technologies that your group and others have recently made available are not mere academic chips that should be allowed to fall where they may. If we should lose more and more ability to excel or have access to them, as you said, we do not have a very bright future. I hope our government will continue to look for ways that might galvanize U.S. industries to do more R&D and effective development of leading-edge critical technology areas. Sometimes it appears we are more interested in delving into new areas of mischief rather than thinking through substantive systemic support approaches. One of my colleagues at Du Pont recently told me of the debate around charging industry for use of such government facilities as synchrotron beam lines. Industry already had invested heavily in the analytical technologies to use such capabilities because of agreements to gain free time. This kind of behavior does not lead to a lot of trust or collaborative risk taking.

May 14, 1991

We are still very anxious to have you and any of your staff members who are interested visit our research facilities in Wilmington. We can promise you an interesting day and would be glad to tailor a program to your liking.

Thanks again. We all enjoyed meeting you and the luster you added to our Lavoisier ceremony was invaluable. I hope to see you again soon.

Very truly yours,



Alexander MacLachlan

AM:jmp

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION

DOCUMENT NUMBER: 9121418

FROM: MAIBACH, Michael: INTEL

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 05/13/91

SUBJECT: A COPY OF "TECHNOLOGY 2000: THE FUTURE OF COMPUTING
AND COMMUNICATIONS"

ASSIGNED TO:

ACTION REQUIRED:

SENDER'S DUE DATE:

OSTP DUE DATE:

DATE COMPLETED: -----

COPIES TO: D. Allan Bromley
Dr. Wong
Dr. Phillips

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS: Enclosure to DAB, E. Wong and W. Phillips

DATE RECEIVED: 05/14/91

FILE: INDUSTRIAL TECHNOLOGY



RECEIVED

Michael C. Maibach
Director of Government Affairs

91 MAY 14 P12:02

OFFICE OF THE
DIRECTOR May 13, 1991

Allen, Gene + Bill —

Dear Colleague:

I have enclosed TECHNOLOGY 2001: THE FUTURE OF COMPUTING AND COMMUNICATIONS, I think it will be of interest to you. Chapter three was authored by Intel managers. IBM, Cray Research, Texas Instruments, Xerox Corp. and other leaders of technology development are contributors to this work as well. Enjoy!

Cordially,

Michael —

"CORRESPONDENCE TRACKING"

TYPE: ACTION

DOCUMENT NUMBER: 9121357

FROM: GREYBER, Howard

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 05/04/91

SUBJECT: REQUEST TO SHOW THE ARTICLE, " WHY NOT A U.S. HIGH
TECHNOLOGY BANK" TO THE PRESIDENT ALONG WITH MR.
GREYBER'S COMMENTS.

ASSIGNED TO: D. Allan Bromley

DAB
What sh'd we
do with this??
D *☺*

ACTION REQUIRED: AS/IF APPROPRIATE

SENDER'S DUE DATE:

OSTP DUE DATE:

05/22/91

DATE COMPLETED: -----

COPIES TO: Dr. Phillips

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS:

DATE RECEIVED: 05/07/91

FILE: INDUSTRIAL-TECHNOLOGY

May 4, 1991

Dr. D. Allan Bromley, Science Adviser to the President
The White House
Washington, D.C. 20500

Dear Dr. Bromley:

I hope you liked my proposed "Major Education Initiative for the Bush Administration" that I handed to you at the APS banquet. A copy was sent to Brent Scowcroft. Sununu brushed it off with the "handed to staff". 435 High Schools of Science & Technology would be a major milestone that Pres. Bush could be proud of long after he leaves office in 1997, Jan. 20th. They would also advance our national security, guiding more Americans into productive R&D. Please show the idea to the President. One can start with just 10 schools per year, costing \$250 million, and increase as the economy permits.

Encouraged by your remark at APS, "don't be so sure the Administration is hobbled by fear of 'industrial policy'", I enclose an article that I wrote in April 1989. It was sent to Secretary of Commerce Robert Mosbacher, but was deflected into the bureaucratic maze. I sent my article to Lester Thurow, director of the MIT Alfred Sloan School of Management, for comment and his reply is attached at the end of my article, "Why Not a United States High Technology Bank?". Notice he says "I believe in proposals such as yours - -".

Please show the article to President Bush along with my comments below:

Mr. President, with all due respect, we already have literally hundreds of examples of industrial policy in the USA, for instance

1. restrictions on sugar imports, keeping the price far higher than world price.
2. subsidies to shipbuilders and restrictions that allow only U.S. ships to carry cargo between U.S. ports.
3. restrictions on automobile imports, ... and hundreds of other examples.

Japan's economic warfare on us, seizing one key industry after another, is as deliberate as their war plans in World War 2, where I was a naval officer (radar officer, APA-21) just as you were. Privately Japanese admit scorn for how, while their markets are closed, we allow our "seed corn" young high technology companies to be bought out! Their \$500 million per year lobbying effort coined the word "Japan-bashing" to stop any attempt for America to defend its future.

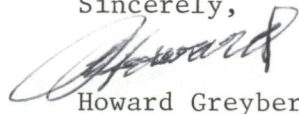
Besides Treasury loans, the USHTB would be financed by selling bonds and Japan could buy some too!

* * *

I hope you like the High Technology Bank concept and convince the President. It would be a tremendous feature of his presidency long remembered.

Lets hear from you. Best wishes,

Sincerely,


Howard Greyber

10123 Falls Road
Potomac, MD 20854-4107

301-299 8168

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
02a. Resume	Resume of Howard D. Greyber [personal information redacted] (1 pp.)		(b)(6)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: General Science Files
WHORM Cat.:
File Location: Industrial: General [6 of 7] [1991]

Date Closed:	3/10/2010	OA/ID Number:	62034-006
FOIA/SYS Case #:	2005-0336-F	Appeal Case #:	
Re-review Case #:		Appeal Disposition:	
P-2/P-5 Review Case #:		Disposition Date:	
AR Case #:		MR Case #:	
AR Disposition:		MR Disposition:	
AR Disposition Date:		MR Disposition Date:	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

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P-3 Release would violate a Federal statute [(a)(3) of the PRA]
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C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
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Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
02b. Article	Article by Howard D. Greyber [biographical information redacted] (1 pp.)		(b)(6)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: General Science Files
WHORM Cat.:
File Location: Industrial: General [6 of 7] [1991]

Date Closed:	3/10/2010	OA/ID Number:	62034-006
FOIA/SYS Case #:	2005-0336-F	Appeal Case #:	
Re-review Case #:		Appeal Disposition:	
P-2/P-5 Review Case #:		Disposition Date:	
AR Case #:		MR Case #:	
AR Disposition:		MR Disposition:	
AR Disposition Date:		MR Disposition Date:	

RESTRICTION CODES

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(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
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Why Not A United States High Technology Bank ?

Submitted for publication - by Howard D. Greyber

(b)(6)

For far too long, the response of the United States to the tremendous growth in the production of technology-intensive goods by Japan has been haphazard and inadequate. Inside of a huge \$65,000,000,000 trade surplus with the United States, Japan has today a surplus of more than \$13 billion in high technology goods (an area we once dominated). Similar strides are being made by the "Four Dragons", South Korea, Taiwan, Singapore and Hong Kong. When mainland China someday escapes the shackles of communist dogma, the economic challenge from a nation with more than one billion people may be immense.

Using its gigantic new wealth, Japan is not only buying out huge chunks of American real estate, major companies (such as Firestone Rubber Co.) and building Japanese owned and controlled companies here, but also has surpassed the U.S.A. in the percent of GNP devoted to research and development. According to the National Science Foundation, already back in 1985 it was 2.8% for Japan and 2.7% for the USA, and ^{there} is probably more difference today. In addition a far larger share of our R&D dollars are spent on military research, so the gap in civilian R&D is much greater.

Japan is making real progress in scientific research (as exemplified by their new "Science City") but the real shocker is their soaring progress in technology. The N.S.F. report points out that from 1970 to 1986 the share of American patents awarded to Japanese inventors leaped from 4 percent to 19 percent and Japan led all foreign countries! The National Science Foundation report commented that these inventions were often cited by other inventors and were often "very significant".

Surely no one can deny that the progress, not only by Japan, but by the "Four Dragons" and West Germany and other EEC countries, contributes to the economic problems America faces today. We must recover our lead in high technology for economic, military and political reasons, or by 2000 A.D. (only 11 years away) we could sink to a second-rate status, unable to afford space exploration except as "hitchhikers" on a Japanese or Chinese or European spacecraft! Japan has a firm goal of raising the percent of GNP concentrated on research and development. Can we keep up?

The Japanese strategy has been to seize the lead in the highest quality high technology manufactured items and use the profits to expand in all directions. Their Ministry of Trade and Industry (MITI) has not only guided funds to develop promising new technology areas all the way to production of the commercial product, but has insisted on quality. Their major effort to use the ideas of the American professor Deming on quality in manufacturing is remarkable, (they still have an annual Deming Prize awarded at an elaborate governmental affair).

While our economic system does not permit us to copy MITI directly, most of its advantages can be attained by the creation by Congress of a United States High Technology Bank, (HTB)*. The HTB would be financed by a large loan, say \$10 billion, from the Treasury and run by dynamic tough bankers, with a Board of Directors that would include the Secretary of the Treasury as well as top technology executives such as William R. Hewlett of Hewlett-Packard and Edwin Land of Polaroid Corp.. A high level Technology Advisory Board, with representatives from all the major government laboratories as well as from the National Science Foundation and NASA headquarters would insure careful technical evaluation of each proposal.

America has already strengthened the R&D aspect of our high technology effort by (a) a successful Small Business Innovation Research program in many government agencies, (b) establishment by N.S.F. of a series of Super-computer Centers, (c) establishment by N.S.F. of a number of Engineering Centers, (d) the plan to create three NIST Manufacturing Technology Centers, and smaller private innovations. What is crucial to overtake the Japanese in commercial high technology is to provide (as MITI does) three things:

1. A commitment to continuous financial backing for those high technology companies in fields deemed ready for profitable commercial development of products, until marketplace success.
2. A commitment to high quality efficient manufacturing and strongly backed market penetration.
3. Close relations with pools of venture capital, with banks and with American high technology companies of all sizes.

After identifying companies with the most promising high technology (in such fields as for instance, high temperature superconductivity or semiconductor chip manufacturing), the Bank would invite private sources

*If not ground up in the abstract theological debate over whether America should have an 'industrial policy', the HTB would be a political plus, a bold major new initiative for the Bush Administration. This is Protecting America's Future, (not "Japan-bashing" (as Japan's army of lobbyists will claim)).

of capital to join in the financing. Like a private venture capitalist, the Bank would take convertible bonds for its investment, which would typically be 5 to 10 percent of the financing. However the cachet of HTB sponsorship, after careful technical and economic scrutiny, would aid the young struggling high technology company in many ways... not the least in gaining market acceptance.

There are many critical high technology fields where the United States simply cannot afford to concede leadership to ^{the} quietly planned onslaught of Japan, Inc.. These areas include ceramics for automobile engines, high definition television, semiconductor chip manufacturing, telecommunications, and biotechnology, among others. Of course there are private efforts in each of these areas, with more or less government help or blessing, but these valiant initiatives tend to be inadequate, - like putting a jeep against a tank on the battlefield. A well financed United States High Technology Bank could coordinate ^{and} make it an equal economic battlefield.

Let us be clear that the creation of a United States High Technology Bank is not a panacea, a cure-all for our problems. There is still the harrowing condition of American public school education. There is also the deplorable lure of huge financial coups (make your million by 28 years of age) that draws very talented youth into corporate law, investment banking (merger & acquisitions), who often are quite capable in high technology but turn it down. How can the profitability of running a small growth high technology company compare with the profits from a couple slick leveraged buyouts, which are encouraged by outrageous tax code provisions ?

If the HTB is successful in financing a few successes, such as Digital Equipment or Xerox Corp. in past decades, it will soon grow in capital, in power and in influence so that America regains leadership in ^{the} production of high technology goods by the end of this century. Japan right now is trading with us as if America were her colony. Nontariff barriers keep thousands of American products out of her markets, while they undercut and squeeze out American manufacturers, (remember our baseball bats banned by some technicality?). With the confidence of arrogance, they refuse to buy American lumber products but insist on just purchasing the raw logs, (Britain used similar tactics with her colonies). States in the U.S.A. compete to give Japanese companies huge subsidies to build plants. These plants then compete with an American plant (long established) that has no such subsidy. This is not fair trade.

One example of rapid loss of American-owned high technology companies to foreign ownership is described in a recent Washington Post article. (hundreds of others exist such as Amdahl Computers, bought out by Fujitsu, etc.). Silicon wafers are the flat discs from which computer chips are made, and the manufacturing technology is believed to be vital to our national security. Yet three U.S. producers have been sold to the Japanese in the last 3¹/₂ years and a fourth sale is pending. Another sale, that of Monsanto Electronic Materials, to Huels AG of West Germany, is merely awaiting approval by a government committee.

It will probably be approved despite strong concerns by Defense Dept. officials and industry spokesmen. Robert Noyce, the president of the Sematech consortium commented, "We view with alarm that the last American silicon supplier is foreign-owned".

A number of factors affect this hemorrhaging of American high technology companies to foreign domination. One is that Japan's carefully orchestrated informal barriers prevent thousands of U.S. high technology products from being sold in Japan, (while Japanese products have free access to the huge American market, and often their companies get huge subsidies to locate their new plant in a particular state (!)). Monsanto points out that despite 17 years of efforts, such barriers kept it down to 2% of the Japanese market for silicon discs. These well-documented Japanese tactics are harsh economic war against us, a gradual "Pearl Harbor" eroding our economic base.

A second factor is the decline in the value of the dollar. Japan's Makoto Utsumi, a top official in their Finance Ministry, admitted that Japan's trade surplus vis a vis the United States has actually widened as the dollar got weaker, in contrast to what was expected by the "experts" when the Plaza agreement to force down the value of the dollar was signed. He commented that a further rise in the yen would simply make more "America for Sale" for Japanese conglomerates.

A third factor is that Japan's network of interwoven banks and trading companies (Gen. Douglas McArthur broke up this network at the end of World War II, but it has long since reformed) directs floods of capital to Japanese companies breaking into what they feel are strategic future markets overseas, and

simultaneously prevent entry of foreign capital into Japan in these areas until Japanese domination is established. Of course their high savings rate and low interest rates assist their strategy.

A fourth factor (partially due to our very low savings rate and high interest rates) is Wall Street's tendency to value a company according to its last quarter's earnings. A Japanese electronic executive was quoted as commenting scornfully, "In Japan, long-range means ten to twenty years, while in America it means one to two years".

Other factors are well known such as the ferocious Japanese insistence on quality and the much closer relations between Japanese executives and workers on the factory floor than exist today in American companies. We were better 50 years ago in both areas than we are today. For instance, in 1940 most heads of electric utilities were originally engineers - while today they are M.B.A.'s or lawyers. As some Harvard Business School professors admitted ruefully, too often M.B.A.'s care only about the immediate bottom line, (ignoring long-range opportunities), which will enable them to jump to another company at a higher salary.

In 1940 American products were generally of the highest quality while Japanese products were commonly regarded as cheap junk!

It is time that America realize we are in a deadly economic war for survival as the leading economic power in the world. To do this we must create a fair, level economic battlefield and not accept the present field, strongly tilted against us by Japan and West Germany, our erstwhile wartime enemies. Our future standard of living, our military and political and economic position in the world in the Nineties and the Century beyond are at stake in this battle.

The creation of a United States High Technology Bank would (if well financed and staffed) be a powerful focus for changing the factors mentioned above in our favor to varying degrees. Besides aiding American high technology companies to survive, compete and prosper, the Bank's powerful authoritative American voice would tend to counteract the increasingly malign influential lobbying by large foreign corporations of Congressmen, Senators and Congressional staff. The Toshiba Corp. success in vitiating deserved sanctions for its aid to the Soviet military is a case in point.

Of course when presented with the concept of a United States High Technology Bank, many bankers and venture capitalists will oppose it, fearing competition and claiming that they are already doing the financing job adequately. Such opposition reminds one of the opposition to the creation of the Federal Reserve System, to the creation of the Export-Import Bank, etc. Now bankers praise and profit from these institutions. The huge drop in our economic status in a mere thirty years, i.e. since the bright future portrayed by President Kennedy in his inaugural speech in January 1961, is proof enough that more needs to be done.

Today, at the start of a new Administration with a new President, is the ideal time to construct an initiative like USHTB. The fact that George Bush has chosen as chief of staff an energetic engineer and former governor with a Ph.D. from M.I.T., John Sununu, is very encouraging for the success of HTB. If Mr. Bush appoints ^{an experienced} Science Adviser, or, better still, an Assistant to the President for Science & Technology, and permits the reestablishment of a strong Advisory Board as existed under Eisenhower and Kennedy, the chance for successful creation of the High Technology Bank would be enhanced.

Many people will argue that existing institutions could be modified and do the job. It is a sad fact that institutions tend to become bureaucratic and inflexible as they age. For this reason some have suggested a "sunset" law that would automatically dissolve agencies after a fixed time. As the Nobel Prize physicist, Richard Feynman, pointed out after serving on commission investigating the Challenger disaster, simple bureaucratic inertia was a factor.

A new institution, like the High Technology Bank, would (if properly staffed) have a creative drive and elan to start to turn things around, and make changes that would in a few years make America the leader in high technology manufacturing in keeping with our diverse and outstanding scientific establishment. The great mathematician, John von Neumann, once remarked that frequently there are times when technology drives science rather than the reverse. A successful USHTB could eventually be a tremendous support for pure and applied science research, as well as preserve our economy against the challenge of Japan, the "Four Dragons", the European Economic Community and other developing countries.

10123 Falls Road
Potomac, MD 20854

Tel. 301/ 299-8168





Massachusetts Institute of Technology
Alfred P. Sloan School of Management *Revised*
50 Memorial Drive
Cambridge, Massachusetts 02139
Telephone: 617-253-2932

Lester C. Thurow
Dean

September 21, 1989

Dr. Howard D. Greyber
Greyber Associates
10123 Falls Road
Potomac, MD 20854

Dear Dr. Greyber:

A number of proposals similar to your high technology bank have been advanced in the past (Felix Rohatyn had a similar proposal) but they have all floundered and not gotten off the ground. Basically they were ground up in the abstract ideological debate as to whether America should or should not have an industrial policy and whether private capital markets do or do not need outside help to finance those things that ought to be financed.

I believe in proposals such as yours, but I don't know what the selling process is that would lead them to actually be implemented.

Sincerely yours,

LCT:ml

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20506

May 9, 1991

Dear Dr. Greyber:

Thank you for your letter of May 4 enclosing a copy of your article on technology. I will keep it available and share it as appropriate.

I appreciate your thinking of me.

Sincerely,

A handwritten signature in dark ink, reading "D. Allan Bromley". The signature is written in a cursive, flowing style. The first name "D. Allan" is written in a smaller, more compact script, while "Bromley" is written in a larger, more expansive script with a prominent loop at the end.

D. Allan Bromley
Director

Dr. Howard Greyber
10123 Falls Road
Potomac, MD 20854-4107

"CORRESPONDENCE TRACKING"

TYPE: ACTION

DOCUMENT NUMBER: 9121261

FROM: MOSBACHER, Robert A.: THE SECRETARY OF COMMERCE

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 04/22/91

SUBJECT: A COPY OF THE 1991 EDITION OF THE "U.S. INDUSTRIAL
OUTLOOK". COMMENTS ARE WELCOME.

ASSIGNED TO: INDUSTRIAL

ACTION REQUIRED: FOR DAB SIGNATURE

SENDER'S DUE DATE:

OSTP DUE DATE:

05/13/91

DATE COMPLETED:

6/17

COPIES TO: D. Allan Bromley
INTERNATIONAL/POLICY
Ken Yale

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS: Enclosure to Dr. Phillips.

NOTE: after making document, return to Room 431, OSTP Liaison
(Returned 6/17 jpf).

DATE RECEIVED: 04/29/91

FILE: INDUSTRIAL



THE SECRETARY OF COMMERCE

Washington, D.C. 20230

April 22, 1991

RECEIVED

01 APR 29 P 3:35

OFFICE OF THE
DIRECTOR

Dr. D. Allan Bromley
Director, Office of Science and Technology
New Executive Office Building
Washington, D.C. 20506

Dear Allan:

I am pleased to send you a copy of the 1991 edition of the U.S. Industrial Outlook, one of the Department's most important and popular publications.

As the enclosed press release points out, this year's Industrial Outlook includes new coverage of the international competitiveness of individual industries, reflecting the continuing role that exports play in propelling our economy.

I hope the fresh data and analyses in this 32nd edition of the Outlook are useful to you. Your comments on the Outlook are welcome.

Sincerely,

A handwritten signature in dark ink, appearing to be "R. Mosbacher", is written over the typed name.

Robert A. Mosbacher

Enclosure

UNITED STATES DEPARTMENT OF
COMMERCE
NEWS
WASHINGTON, D.C. 20230

INTERNATIONAL
TRADE
ADMINISTRATION

CONTACT: Sally Carson (202) 377-4356

ITA 90-89

EMBARGOED FOR RELEASE:
6:30 PM EST Sunday, Dec. 30, 1990

OUTLOOK FOR U.S. INDUSTRIES
POSITIVE DESPITE SLOWDOWN

Forecasts for 350 U.S. industries in 1991 point to continued but slower economic expansion, Under Secretary for International Trade J. Michael Farren said today in releasing the 1991 U.S. Industrial Outlook.

The Outlook, which has been published annually by the Commerce Department since 1959, provides industry-by-industry reviews of the U.S. economy, with analyses and projections by international trade administration experts.

"Overall, we see continued growth in 1991 for the majority of industries, both manufacturing and services," Farren said. "Exports will provide an important source of vitality for many industries, partially counteracting weakness in other elements of the U.S. economy."

In manufacturing, most high-technology industries will again outperform the rest of the economy. Semiconductors and related devices are forecast to grow 8.9 percent in 1991. Computer industry shipments are expected to increase 6 percent.

Aircraft, engines, and parts will experience another strong year with real growth in 1991 projected to be 4.6 percent, following 17.8 percent estimated growth in 1990.

Machine tools will also demonstrate strength. "This is an indication that businesses will continue to invest in new equipment needed to raise efficiency and productivity in today's increasingly competitive environment," Farren said.

Two important industries not expected to perform well in the coming year are motor vehicles and construction. Both will experience negative growth, according to Farren, with new

(more)

Predictions for Industries' Growth in 1991

Growth Rate Estimates and Projections For Selected Industry Groups

(based on constant dollar shipments)

Industry	1988	1989	1990	1991
New construction.....	-0.7	-1.5	-1.6	-2.8
Construction materials.....	0.2	1.5	-0.8	-3.2
Food and beverages.....	2.5	1.4	1.3	1.3
Wood products.....	-0.4	-0.3	-1.6	-3.5
Paper and allied products.....	3.6	1.3	1.6	2.2
Printing and publishing.....	0.7	2.1	1.0	2.1
Chemicals and allied products.....	4.6	2.0	1.6	1.0
Rubber and plastic products.....	2.2	1.1	1.0	0.8
Steel mill products.....	15.6	0.3	-1.0	-4.8
Machine tools.....	4.3	18.6	5.3	5.0
Computers and peripherals*.....	14.9	6.1	4.4	5.6
Industrial machinery.....	10.7	4.7	2.5	1.9
Telephone and communication equipment.....	1.8	2.6	1.9	1.9
Electronic components and accessories.....	13.8	6.7	1.8	6.2
Electrical equipment.....	7.6	0.7	-1.1	-2.3
Motor vehicles and parts.....	5.5	0.0	-2.6	-1.4
Aircraft and parts.....	5.5	-14.0	17.9	4.6
Scientific and medical equipment.....	7.6	7.0	2.1	2.9
Household consumer durables.....	2.8	1.3	-2.0	-2.0

*In current dollars.

SOURCE: U.S. Industrial Outlook datafiles.

Growth Rates for Selected Service Industries

Industry	Unit of Measure	Rate of Growth (percent)	
		1990	1991
Electronic information services.....	Revenues	NA	20.0
Computer software.....	Revenues	20.0	20.0
Computer professional services.....	Revenues	NA	17.3
Data processing.....	Revenues	15.0	16.0
Accounting.....	Receipts	12.6	12.7
Health services.....	Revenues	11.9	12.0
Cable television.....	Revenues	NA	12.0
Management and consulting, and public Relations.....	Receipts	9.9	10.3
Leasing.....	Equipment cost added	8.5	8.1
Life insurance.....	Premiums	8.8	8.0
Property-casualty insurance.....	Net premiums written	4.4	6.2
Total retail trade.....	Sales	6.0	6.0
Food retailing.....	Sales	7.2	7.7
Eating and drinking places.....	Sales	8.5	6.2
Department stores.....	Sales	6.0	6.2
Apparel and accessories stores.....	Sales	5.7	6.1
Advertising.....	Receipts	5.1	5.6
Banking.....	Assets	5.0	5.5
Prerecorded music.....	Manufacturers' dollar value	4.0	5.0
Legal services.....	Receipts	4.9	4.8
Home entertainment.....	Revenues	NA	4.0
Motion picture theaters.....	Receipts	0.0	1.6
Space commerce.....	Revenues	29.0	0.0

SOURCE: U.S. Industrial Outlook datafiles.

10 Fastest Growing Four-Digit Industries in 1991

(based on constant dollar shipments)

SIC Code	Industry	Percent Change
3111	Leather tanning and finishing.....	9.4
3674	Semiconductors and related devices*.....	8.9
3841	Surgical and medical instruments.....	8.6
3842	Surgical appliances and supplies.....	7.6
2833	Medicinals and botanicals.....	7.1
2835	Diagnostic substances.....	6.9
2015	Poultry slaughtering and processing.....	6.8
2836	Biological products except diagnostics.....	6.2
3721	Aircraft.....	6.0
3843	Dental equipment and supplies.....	5.9

SOURCE: U.S. Industrial Outlook datafiles.

*In current dollars.

10 Slowest Growing Four-Digit Industries in 1991

(based on constant dollar shipments)

SIC Code	Industry	Percent Change
2021	Creamery butter.....	-14.6
2451	Mobile homes.....	-9.5
2053	Frozen bakery products, except bread.....	-6.3
3732	Boat building and repairing.....	-6.3
3621	Motors and generators.....	-6.2
3631	Household cooking equipment.....	-6.0
2426	Hardwood dimension and flooring mills.....	-5.0
3634	Electric housewares and fans.....	-5.0
3441	Fabricated structural metal.....	-5.0
2421	Sawmills and planing mills, general.....	-5.0

SOURCE: U.S. Industrial Outlook datafiles.

THE WHITE HOUSE
WASHINGTON

June 17, 1991

Dear Bob:

My staff and I are delighted to receive the 1991 edition of U.S. Industrial Outlook. I have to believe that this is the "best selling" document published by the U.S. government. It contains a wealth of information that will be useful to not only the Administration and Congress, but to strategic planners in the private sector as well. I applaud the addition of international industry competitiveness profiles, as well as other new features.

Congratulations on a difficult but important task.

Sincerely,



D. Allan Bromley
The Assistant to the President
for
Science and Technology

The Honorable Robert A. Mosbacher
The Secretary of Commerce
Washington, D.C. 20230

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION

DOCUMENT NUMBER: 9121165

FROM: HILL, Chris: THE MANUFACTURING FORUM

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 04/17/91

SUBJECT: DISCUSSION PAPER ON TECHNOLOGY POLICY BY ERICH BLOCH

ASSIGNED TO:

ACTION REQUIRED:

SENDER'S DUE DATE:

OSTP DUE DATE:

DATE COMPLETED:

COPIES TO: D. Allan Bromley
Thomas Ratchford
Dr. Phillips

WHITE HOUSE TRACKING #:

CONTACT PERSON: PENNY GIBBS

REMARKS: Enclosures to DAB, TR, WP and the file.

DATE RECEIVED: 04/18/91

FILE: *Industrial*
TECHNOLOGY*POLICY

9121165

THE MANUFACTURING FORUM
National Academy of Engineering National Academy of Sciences
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

Telephone: 202/334-1579
FAX: 202/334-2290
BITNET: CHILL@NAS.BITNET

91 APR 18 P 4: 47

April 17, 1991

OFFICE OF THE
DIRECTOR

MEMORANDUM

TO: Members of the Manufacturing Forum

FROM: Chris Hill, Executive Director *CTH/pg*

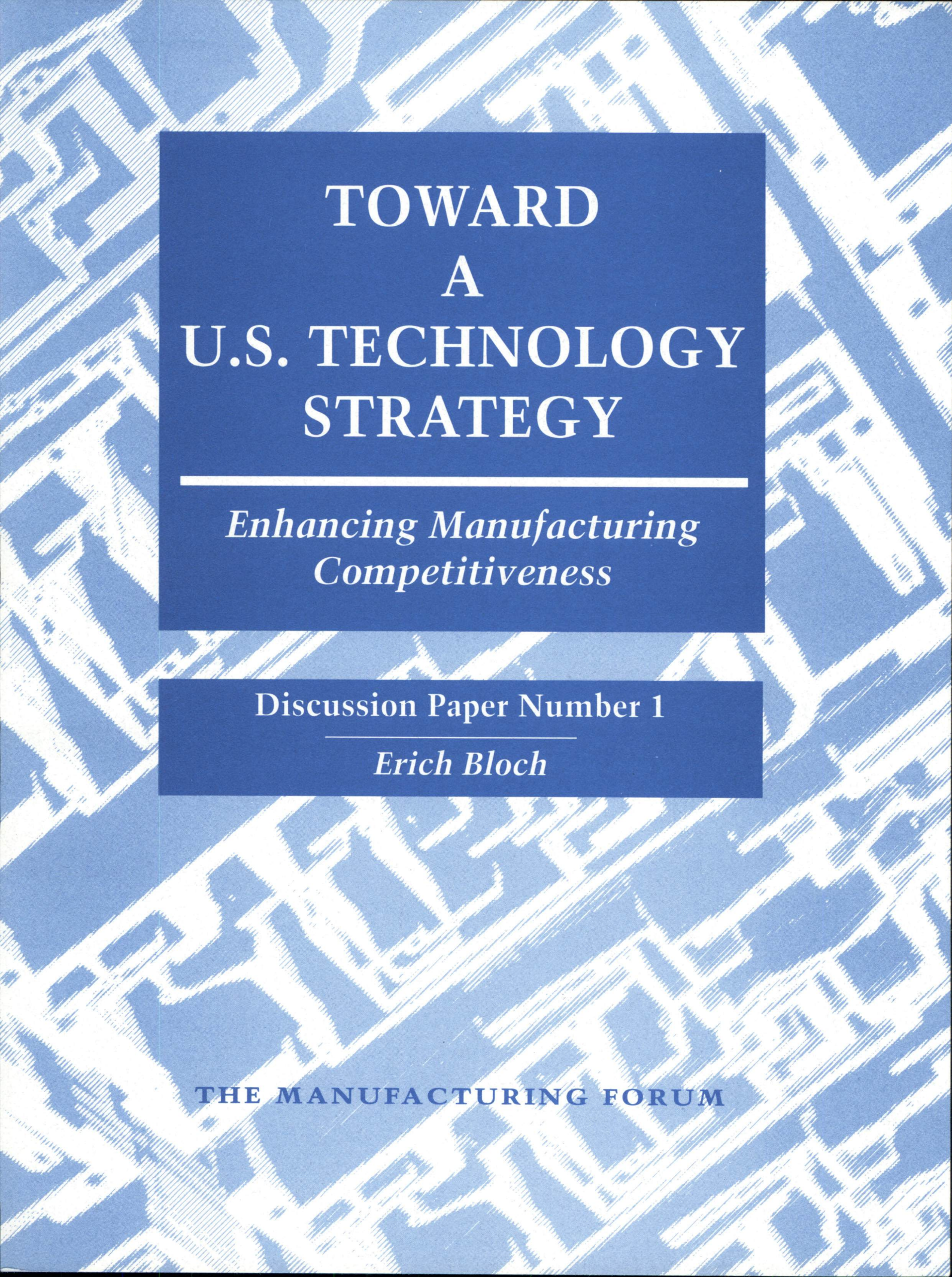
RE: Discussion paper on technology policy by Erich Bloch

Enclosed are five copies of the discussion paper by Erich Bloch entitled "Towards a U.S. Technology Strategy: Enhancing Manufacturing Competitiveness," which returned to us from the printer yesterday. You will recall that this paper was the foundation for a discussion of U.S. technology policy that Erich led at our January 11 meeting.

This is the first of a series of discussion papers prepared for the Manufacturing Forum that we will issue on a periodic basis. Each paper reflects the views of its author, and we intend that the series will reflect a diversity of viewpoints over time. The paper incorporates on the title page a disclaimer of the responsibility of individual members of the Forum, or of the Forum collectively, for the views expressed in this paper.

The paper series is being distributed to several hundred organizations and individuals from our office. Additional copies in modest number are available from the Forum office by calling Penny Gibbs at 202/334-1579.

Enclosures



TOWARD A U.S. TECHNOLOGY STRATEGY

*Enhancing Manufacturing
Competitiveness*

Discussion Paper Number 1

Erich Bloch

THE MANUFACTURING FORUM

TOWARD A U.S. TECHNOLOGY STRATEGY

ENHANCING MANUFACTURING COMPETITIVENESS

By
Erich Bloch

Discussion Paper Number 1
February 1991

This paper has been prepared by the author for the Manufacturing Forum and is published and distributed by the Forum as a public service. Its publication implies no endorsement of its conclusions or recommendations by the National Academy of Sciences, the National Academy of Engineering, the Institute of Medicine, or the Manufacturing Forum, nor by any of their members.

THE MANUFACTURING FORUM

National Academy of Engineering
National Academy of Sciences

NATIONAL ACADEMY PRESS
Washington, D.C.

THE MANUFACTURING FORUM

The Manufacturing Forum was established in 1990 by the National Academy of Engineering and the National Academy of Sciences to provide a means by which policymakers from government, industry, and universities can meet to discuss issues that influence the competitiveness of manufacturing industries. The Forum is based on the recognition that future challenges to the performance of U.S. manufacturing industries from increased foreign competition, from developments in new technology, and from changes in our domestic economic and societal climates can only be effectively met by a concerted effort on the part of industry, government, and academia.

The Manufacturing Forum is a device for improving communications among its members and to the larger community. It does not conduct studies, provide advice, or make recommendations on specific issues or policies.

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PHILIP E. BENTON, JR., Ford Motor Company
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S. LINN WILLIAMS, Office of the U.S. Trade Representative

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FRANK PRESS, National Academy of Sciences
ROBERT M. WHITE, National Academy of Engineering

Manufacturing Forum Staff

CHRISTOPHER T. HILL, Executive Director
PENELOPE GIBBS, Administrative Assistant

ACKNOWLEDGEMENT

The author wishes to acknowledge Dr. T. Samantha Solomon, Solomon Associates, for her invaluable assistance in the researching, writing, and editing of this report to the Manufacturing Forum.

He also wishes to thank the many members of the community who reviewed this report in draft and made valuable suggestions for its improvement.

FOREWORD

The Manufacturing Forum has identified many issues that need to be addressed and many opportunities that need to be grasped on the way to improving the future performance and competitiveness of U.S. manufacturing industries, including changes in management practices, changes in the climate for investment, upgrading of the manufacturing workforce at all levels, and changes in a host of public policies intended to facilitate and/or constrain our manufacturing industries.

To facilitate its consideration of specific manufacturing issues, the Forum commissions experts in a variety of fields to prepare discussion papers. Each author is encouraged to express his or her own views sufficiently sharply to catalyze serious discussion. The Forum members offer their individual views, which authors may accept or reject, but the papers do not in any sense represent the views of the Forum as a whole.

Few issues arise more consistently and more insistently than the need to discover, develop, apply, and continuously improve the technologies employed in our manufacturing industries and in the other parts of the economy that support or depend on them.

Ensuring a continual stream of new technologies and attending to their effective application is first and foremost a responsibility of individual industrial firms in the private sector. However, both our historical experiences and those of competitor nations demonstrate that wise public policies can play critical roles in encouraging and facilitating technological change and application in industry, and that such policies can bring benefits not only to industrial performance but to the nation as a whole through enhanced contributions of industry to the economy, to national security, and to the quality of life for all citizens.

In this paper, Dr. Erich Bloch, former Director of the National Science Foundation and a member of the Manufacturing Forum, presents his views on changes that should be considered in formulating our national technology policy in the interests of enhancing manufacturing competitiveness. This paper was a basis for discussions of technology policy in a meeting of the Forum in January 1991.

Ruben F. Mettler
Chairman

Executive Summary

Americans need to understand that the world they live in is fundamentally changing. The United States was in a dominant position at the end of World War II. It had the most advanced technology, and it had the manufacturing and marketing resources to dominate international trade. Today, the U.S. trade balance is overwhelmingly negative. Even the advantage in the high-technology industries we once took for granted has virtually disappeared.

The United States does not lag behind its competitors in generating basic research results or in the quality of its Ph.D. scientists and engineers. But America's former competitive advantage in the commercial application of technological developments and discoveries is quickly being eroded by our competitors who often deploy new technologies in products and processes with greater speed than we do. The results are an American "manufacturing gap" and, ultimately, an increasing deterioration of our technology base.

We are not just witnessing a "natural" adjustment in the post-war economy, as has been suggested, but rather a profound and critical decline in U.S. technology and manufacturing. While the primary responsibility for this decline in manufacturing competitiveness falls on the private sector, federal policies and practices—such as those affecting education, macroeconomic policy, regulatory policy, antitrust guidelines, tax policy, trade and investment policies, and science and technology policy—have a major impact on the country's ability to compete. To be successful in ensuring that the United States remains a world-class manufacturing competitor, then, its technology policy must be accompanied by a variety of policies, programs, and actions by government, industry, and universities in these other areas.

Because manufacturing is one of America's economic foundations, and because it is of strategic importance to the competitive position of the United States in the world economy and to the maintenance of national well-being and security, these declines in national capabilities relative to our major competitors require the immediate attention of both the private and public sectors.

First, industry, academia, and the federal government must look at science and technology—as well as technology and manufacturing—as a continuum, in which the insights of science, from the most fundamental through the applied, are linked to basic technology developments and to products and services in the marketplace. Today's trends in manufacturing toward shorter production runs, shorter product cycles, increasing quality, a greater variety of products with

increasing customization, and a shorter time to market for new products demand an integrated manufacturing environment and a greater harmonization of public policy and private actions.

Second, just as American industry traditionally has too often separated R&D from production, so has the U.S. government treated science and technology as if they were separable entities. In 1945, Vannevar Bush's report to President Truman, *Science: The Endless Frontier*¹, put in place this country's first federal science policy, but assigned no role to the government in technology development. Yet, the report needs to be seen as a product of the times: when Bush wrote his report, America's industrial technology base was very strong, while its science base was relatively weak. Today, the reverse is true—our science base and our basic research and higher education system are unparalleled in the world, while our civilian technology base is in trouble.

Third, the federal government has only lately addressed technology as an issue. Nevertheless, America has had a "de facto" technology policy in place for many decades. In important instances during the 1950s and 1960s, the federal government supported the development of "generic" technologies—most often as part of the war and national defense efforts—which later developed into important new commercial industries for this country. In fact, for nearly 40 years after World War II "strategic technology" was developed mainly in the context of military and space programs. This gave us world leadership in television, integrated circuits, advanced computers, aerospace, lasers, nuclear energy, polymers, and many other fields. However, because of recent developments; namely, the emergence of the civilian sector as the precursor of new technology development—supplanting the military sector, the end of the Cold War, and the aggressive investment by our foreign competitors in coordinated public-private sector initiatives for technology development, this traditional approach to supporting strategic technology development and utilization has become less effective than it was in the past.

While the primary responsibility for civilian technology development and commercial application lies with the private sector, the federal government can and should play a more proactive, participative role than it has traditionally. The White House Office of Science and Technology Policy's (OSTP's) publication in the fall of 1990 of the first "U.S. Technology Policy"² is a step in the right direction. What is now required is for the government and industry to translate that policy into practice by *jointly* developing a strategy to enhance economic growth and manufacturing competitiveness. To begin this task, definite actions should be taken.

REVERSE THE CONTINUING LOSS OF THE U.S. TECHNOLOGY BASE

Leadership

National security is no longer primarily a military concern. Economic growth and security have become vital considerations, and the strategic importance of technology can be a significant contributor to America's future growth and competitiveness. To disseminate this important message, President Bush should include in an appropriate message to Congress and to the American people his support for OSTP's newly issued "U.S. Technology Policy" and should articulate clearly the need to develop jointly with industry, labor, and academia a technology strategy and to establish a continuing industry-government dialogue at the highest levels of government to address strategic issues in science and technology.

Rebalancing R&D Expenditures

While a case can be made for additional R&D funding, the present R&D budget must be scrutinized for reallocation and priority setting in order to increase the effectiveness of current investments in our nation's science and technology base. Today, over 60 percent of the U.S. R&D budget is allocated to defense-oriented R&D. In view of the domain and role being assumed by the civilian sector in technology development, there is a need for more equal balance between civilian and defense R&D by 1995. A better balanced division of expenditures would enable the U.S. to achieve R&D spending on the civilian side of the ledger more comparable to that of our major foreign competitors.

IDENTIFY AND INVEST IN STRATEGIC, GENERIC TECHNOLOGIES

Support for Generic Technologies

Government must play a larger role in ensuring that the United States has the technology necessary to support economic growth and promote manufacturing competitiveness. The federal government should support and participate in collaborative efforts with industry and the universities to develop generic technologies in this country. There are generic technologies that are of prime importance to the future of American manufacturing and to America's technological leadership in the world. Prominent among these are electronics technologies, biotechnology, information technologies, manufacturing and process technologies, and advanced materials technologies.

The 1992 Budget Proposals

Congress should support the President's Fiscal Year 1992 initiatives in science and technology, including the high-performance computing and networking initiative, the embryonic initiative in materials technology and processing, and the manufacturing technology efforts in NIST, NSF, DOE, DOD, and other agencies. Congress and the Administration should also press forward with an imaginative education and human resource initiative to provide leadership to stimulate upgrading the skilled workforce American industry needs to handle tomorrow's advances in science and technology.

R&D Credit

Congress should make the R&D tax credit applicable to R&D related to manufacturing processes, make the tax credit permanent, and make special provisions for investment by firms in industry-government consortia and in academia.

SPEED-UP THE COMMERCIALIZATION OF NEW TECHNOLOGIES

The Role of the Federal Laboratories

The federal government operates more than 700 laboratories with an annual budget of approximately \$21 billion—three-fifths of which goes towards defense applications. This amount is almost one-third of the government's R&D expenditures, and nearly one-sixth of the nation's total. From the perspective of the American economy, these laboratories are an underutilized resource. As an experiment, the missions of some government laboratories, or specific divisions or projects of a single laboratory, should be redirected to support industrial coalitions aimed at creating leadership positions in strategic, generic technologies. Through joint industry-government funding and management, these efforts could become the nuclei of U.S. generic, precompetitive technology development.

ENHANCE COLLABORATION BETWEEN THE PUBLIC AND PRIVATE SECTORS

Collaborative Mechanisms and Technology Transfer

Developing collaborative mechanisms for technology transfer between the public and private sectors and within each sector is fundamental to the effectiveness of any technology strategy. Any viable technology strategy must include vehicles to promote the collaboration of government with industry and the universities. Such "partnerships" can take a variety of forms including

industry-government consortia like SEMATECH, industry-university-government research centers like the National Science Foundation's (NSF's) Engineering Research Centers and its Science and Technology Centers, multi-company industry efforts such as the Microelectronics and Computer Technology Corporation (MCC) and the Semiconductor Research Corporation (SRC), and technology transfer centers like the National Institute of Standards and Technology's (NIST's) five regional Manufacturing Technology Centers that focus on the needs of smaller businesses.

Support for State and Local Initiatives in Science and Technology

Over the past two decades, state and local governments have come to view science and technology programs as keys to economic development. These programs vary from state to state, but generally include funding for advanced technology research centers—sometimes referred to as “centers of excellence,” seed and venture capital funds, technical assistance, incubators, research parks, R&D grants, and information dissemination and technology transfer. The federal government should actively support these efforts and coordinate its activities with state program developers and clients.

CONCLUDING NOTE

The end of World War II was a critical time for the country to establish the science base, strategy, and organizational mechanisms to remain at the leading edge of scientific research. Today, the end of the Cold War, the increasing competition in the global marketplace, and the need for accelerating the economic growth of the U.S. should spur the long overdue effort to put in place the technology strategy and implementing mechanisms needed to return and keep America on the leading edge of technology and manufacturing.

The New Environment

"The world is in political, economic, and technological upheaval unparalleled since World War II. We find ourselves in a new polycentric world in which political, economic, and technological power is dispersed globally."

(Robert M. White, April 13, 1990)³

Americans need to understand that the world they live in is fundamentally changing. Over the past 15 years, the United States and other nations throughout the industrial world have faced and are continuing to face economic, political, and technological realignment of unforeseen proportions. The United States was in an economically dominant position at the end of World War II. It had the most advanced technology, and it had the manufacturing and marketing resources to dominate international trade. But that favorable position is gone. Today, the U.S. trade balance is overwhelmingly negative. Even the advantage in the high-technology industries that we once took for granted has virtually disappeared. It is well recognized that the erosion of American manufacturing capabilities has contributed heavily to the U.S. trade deficit.

The development and use of new and better technology is essential to the future of manufacturing in this country. Although technology alone cannot solve the competitiveness problem—it takes, in addition, a supportive social, financial, and legal environment—technology can be an important tool in developing cost-effective products that will compete in world markets. Now, more than ever, success in the global marketplace means creating and applying new knowledge—which is to say new technology—faster than one's competitors. That is the fundamental law in this competitive world.

In recent years, the markets in which we have to sell our products have become international; we no longer have a large domestic market dominated by our own industries. This is true for both new and established industries. During this period we also saw technology become the foundation for a global economy, a major impetus to economic growth, and a principal source of competitive advantage. In addition, we witnessed the emergence of Japan, the Pacific Rim countries, and now the European Economic Community as economic rivals in an increasing number of industries, and the erosion of the U.S. economic position in many of them.

Today, technology is critical to the continued growth of nations. Since World War II, the world economy has been transformed into a knowledge-based, skill-based economy. Industries based primarily on knowledge and fast-moving technologies, such as semiconductors, advanced materials, biotechnology, and information technologies, are the industries that are fueling economic growth. In this new environment, competitiveness is determined less by a nation's abundance of natural resources, low-cost labor, and other classical comparative advantages of the past than by its abilities to generate, access, and rapidly deploy new knowledge and technical insights, and to convert them into quality products and processes.

Academics and analysts have repeatedly raised the question: Is America's eroding competitiveness an inevitable result of our competitors' post-war investments in rebuilding their economies and in research and education, or is there something fundamentally wrong with this nation's capacity to compete? The answer is simple. We are not just witnessing a natural adjustment, but rather a profound and critical decline in U.S. technology and manufacturing. This is evident if we consider the loss in U.S. marketshare of automobiles, semiconductors, instrumentation and machine tools, and robotics in manufacturing processes. This decline in national capabilities requires immediate attention by both the private and public sectors because manufacturing is America's economic foundation and is of strategic importance to the competitive position of the United States in the world economy, and because it is essential to the maintenance of national security.

The reasons for our decline are many. While the primary responsibility for the decline in manufacturing competitiveness falls on the private sector for not being more alert to technological changes, increasing competition, the role of quality, and market demands; federal policies and practices—such as those affecting education, macroeconomic policy, regulatory policy, antitrust guidelines, tax policy, and science and technology policy—can and do have a major impact on the private sector's ability to compete. In fact, the competitive posture of industry has been inhibited by the lack of integration between the government's economic policies and its ad hoc technology programs. To date, the government has not acted to ensure that economic and related policies—such as those listed above—are in place to provide the proper "business environment" for effective technology development and utilization in the private sector. While many of these federal policies and macroeconomic considerations are difficult to alter, particularly in the short term, others are within our reach to change.

However, our problems are not without solutions. America possesses unparalleled strengths in basic research and higher education, in the openness of our society to leadership and new ideas, in the enormous resources devoted to R&D by both the public and private sectors, in our numerous outstanding private and government laboratories, in our large domestic market, in the availability of venture capital, and in the free movement of people among the private, public, and academic sectors.

But America is at a crossroads. If we persist in our traditional attitudes and approaches and are unwilling to modify our institutions, our economic position in the global marketplace will further erode. If we recognize the changes that surround us, take advantage of our strengths, are willing to question established wisdom and to create new collaborations and alignments, and shed outmoded institutions and create new ones, the future can be bright.

Science, Technology, and Manufacturing ---

"So many of the world's most advanced technologies, from robotics to the VCR, were first developed here. And yet, so many of those concepts were ultimately brought to the marketplace by our competitors. We can do better. And I am determined that we will do better."

(President Bush, March 7, 1990)⁴

SCIENCE AND TECHNOLOGY AS A CONTINUUM

America's economic growth and national security are intimately tied to its standing in science, technology, and manufacturing. Today, the speed of progress in research and development and product innovation makes it increasingly inappropriate to divide the activities of science and technology as if they are two separate spheres. Science and technology are a continuum, in which the insights of science, from the most fundamental through the applied, are linked to technology developments and to products and services in the marketplace. An important element of this continuum is the scientific and technological workforce that does the research, develops the technologies, and designs, markets, and services products.

Considering these activities as a continuum is not meant to imply that science, technology, and manufacturing progress sequentially and linearly, and that basic research results precede applied research or technology development. There are numerous cases in which technology development preceded theory. For example, electrical communication systems, the telephone, and the telegraph existed long before a theory of communications was established, and steam engines were developed before thermodynamics became a scientific discipline. Rather, science and technology should be seen as interactive and interdependent — with stimulation and feedback flowing back and forth between parts of the system. The flow is neither linear nor unidirectional. While science and technology share many things in common, such as the scientific approach to experimentation, they also differ philosophically. Science asks: "What is?" while technology asks: "What can be?"

TECHNOLOGY AND MANUFACTURING AS A CONTINUUM

Just as science and technology are a continuum, so are technology and manufacturing. Technology is the driving force in the design and manufacturing of products and the development of services. Technological innovation, design, and manufacturing are interactive and interdependent processes. For example, product development, design, and manufacturing all drive research and are, at the same time, highly dependent on research for successful innovation.

In fact, the continuum runs from basic research to marketing — an approach that in the “best practice” companies is characterized by systematic and incremental improvements in products and processes in response to changing signals from the marketplace. Successful U.S. firms — and many of our major foreign competitors — emphasize simultaneous improvements in engineering, function, quality, cost, and speed of commercialization. In general, the most competitive firms are closer to their customers and to their suppliers than their less successful industrial counterparts; have greater functional integration among research, design, manufacturing, and marketing; and have less hierarchical organizational structures.

The MIT Commission on Industrial Productivity⁵ correctly advocates a systems approach to manufacturing. Such an approach encompasses a great deal more than just what occurs on the production line. It includes designing and developing products as well as planning, marketing, selling, and servicing them. The technologies and processes used in these functions are also a part of manufacturing, as are the ways in which the workforce interacts with technology and is educated and trained.

In contrast to its competitors — particularly those in Japan — U.S. industry has too often placed artificial boundaries between research and design on the one hand, and production and marketing on the other. This counterproductive philosophy is embodied in many American companies in the physical separation of research facilities from the factory floor. Today's trends in manufacturing are toward shorter production runs, shorter product cycles, increasing quality, a greater variety of products with increasing customization, and a shorter time to market for new products. This new climate demands an integrated manufacturing environment that facilitates making incremental improvements and refinements in both manufactured products and the manufacturing process.

There is a consensus that the United States does not lag behind its competitors in generating basic research results or in the quality of its doctoral scientists and engineers. But America's ability to rapidly translate science and engineering into commercializable products, and its ability to take advantage of the detailed insights, understanding, and processes that are a prerequisite to product design and product manufacturing is another story altogether. Thus, in recent years it has become apparent that a “manufacturing gap”—like the technology gap of earlier years—has emerged, and this time it is the United States that lags behind.

Science Policy and Technology Policy

"America assumed that government support for science would be adequate to provide for technology. It is not."

(Council on Competitiveness, 1988)⁶

HISTORICAL OVERVIEW

Before World War II, the federal government played a limited role in the support of science. One major activity, besides the operation of its own laboratories, was the establishment of the National Advisory Committee on Aeronautics (NACA). NACA helped spawn the aeronautics industry in the United States and was the organizational forerunner to NASA. But World War II changed the course of the way science was conducted in this country by harnessing the talents of numerous scientists and engineers to work on the war effort to defend America's national security. The seminal experiences of organizations and individuals during the war fundamentally changed the interactions between the public and private sectors with regard to science and technology. The war led to a massive increase in the level of federal science funding and firmly established the concepts of awarding research grants and contracts for the conduct of R&D in universities and industry, rather than in government-operated laboratories.

In 1945, Vannevar Bush, then director of the federally created Office of Scientific Research and Development, submitted to President Truman his report, *Science: The Endless Frontier*, thereby laying out this country's first federal science policy. In the report, Bush stated that:

*"New products, new industries, and more jobs require continuous addition to knowledge of the laws of nature, and the application of that knowledge to practical purposes.... This essential new knowledge can be obtained only through basic research...that the impetus can come promptly only from the Government...[since] basic research is essentially non-commercial in nature."*⁷

Subsequently, Vannevar Bush's report led to the establishment of the National Science Foundation (NSF). For 40 years NSF, together with other,

mission-oriented R&D agencies of the federal government (e.g., DOD, NASA, DOE, NIH, USDA), has kept the United States at the leading edge of basic scientific and engineering research.

But in the same document, Bush made short shrift of any government role in technology development, asserting that: "industry will fully rise to the challenge of applying new knowledge to new products. The commercial incentive can be relied on for that." However, Bush's view notwithstanding, during the 1950s and 1960s there were important instances in which the federal government supported the development of generic technologies—as part of the war and national defense efforts—that later developed into important new commercial industries for the country. Television, for example, gained immensely from radar and electronic developments undertaken for military and defense reasons. In fact, for nearly 40 years after World War II, "strategic technology" was developed mainly in the context of military and space programs supported by DOD and NASA. This gave us world leadership in integrated circuits, advanced computers, aerospace, lasers, nuclear energy, polymers, and many other fields. However, recent developments have made dependence on military programs to support strategic technology development and utilization less effective than it was in the past.

THE PARADIGM SHIFT

Several factors make it less likely that defense and other mission-oriented R&D will be a primary source of commercial technology development in the years to come.

First, the fundamental shift away from U.S.-Soviet military confrontation is likely to reduce the military R&D budget and make it less possible for military agencies to develop important dual-use technologies.

Second, the time scales for the development of military products and commercial products are diverging, making commercial products the precursor for new technologies, and resulting in strategic technologies of the future being increasingly developed in civilian contexts rather than in military or space programs. Biotechnology, semiconductor manufacturing, robotics, artificial intelligence, high-definition displays, and materials technology are all being developed for and finding applications today in the civilian sector earlier than in the military sector. This is the reverse of the situation that existed prior to about 1980.

Third, federal government agencies are end-mission-oriented (e.g., defense, health, agriculture) in their selection and funding of projects and are not oriented towards the development of commercial technology. In addition, government standards and specifications—especially those of DOD—optimize technologies with different goals in mind than those sought by producers of commercial products. With defense accounting for close to 65 percent of federal R&D spending, and with defense technologies becoming less relevant to the needs of the marketplace and to the economic growth of the nation, it is

important that we consider a rebalancing and reoptimization of federal R&D spending to utilize these scarce resources more effectively.

The governments of most other industrial nations—and assuredly of our major competitors—have purposefully promoted research and technology for economic development. The role that governments have assumed in supporting research, technology development, and its applications varies over a wide spectrum of activities and programs. For example, in Japan emphasis is placed on reducing ideas to practice and making the commercialization process more rapid. The Ministry of International Trade and Industry (MITI) promulgates a broad strategy that harmonizes the efforts of government and industry in particular areas of technology development. The MITI-sponsored program on very-large-scale integration (VLSI) is thought to be one of its primary successes to date—a program that led to the dominance by Japanese manufacturers of the production of semiconductors and to the near world monopolization of dynamic random access memory (DRAM) chip production.

The governments of countries forming the European Community (EC) address science, technology, and manufacturing issues across the board, ranging from basic research to development of prototype products. Since its launch in July 1985, EUREKA has demonstrated success in bringing about transnational cooperation in fields of high technology close to the market. ESPRIT—the European strategic program for R&D in information technology—is designed to stimulate precompetitive R&D activities by means of projects carried out in collaboration with governments, industry and research centers in member states, and the EC. JESSI—the Joint European Submicron Silicon Initiative—is one of the newer internal collaboration activities in Europe. Funded at a level of \$3-4 billion for the first half of the 1990s, JESSI could become a significant challenge to established competitors in the semiconductor industry.

While our competitors engage in coordinated public-private sector initiatives for technology development and utilization, the debate in the United States centers on whether and how America's policy should deviate from its traditional approach of government-supported basic research, defense technology, and mission-oriented R&D.⁸ Other than spinoffs from defense and other mission-oriented technology programs, the commercial development and application of new technologies have for the most part been considered the responsibilities of the private sector.

In contrast to other countries, U.S. policymakers have not viewed science and technology as a continuum; rather, they have tended to draw an arbitrary dividing line between the two. Government involvement in science is widely viewed as a legitimate role, while its support of technology is not. We have had a science policy in place for over 40 years, concentrating almost exclusively on support for basic research. But government support for science is not sufficient to ensure a national comparative advantage in commercial technology development and utilization, because the problems and issues addressed by technology are different from those that form the basis of scientific research.

Because of the new international environment and the continuing erosion of our technology and manufacturing base, in the fall of 1990 the White House Office of Science and Technology Policy (OSTP) issued what is the first "U.S. Technology Policy."⁹ "The goal of U.S. technology policy," it states, "is to make the best use of technology in achieving the national goals of improved quality of life for all Americans, continued economic growth, and national security." This statement outlines public and private sector responsibilities for ensuring sound technology policy, and in its introduction it proposes that:

"A nation's technology policy is based on the broad principles that govern the allocation of its technological resources. Competitive market forces determine, for the most part, an optimal allocation of U.S. technological resources. *Government can nonetheless play an important role by supplementing and complementing those forces.*" (emphasis added)

In elucidating federal R&D responsibilities, the document outlines two roles that are pertinent to this discussion:

"Increase Federal investment in support of basic research. Private industry does not invest heavily in basic research because the payoffs are so unpredictable and diffuse that individual firms cannot be confident of fully recovering their investments. However, the long-term potential benefits of this research are so large that society cannot afford not to make the investment, especially in university research which, in addition to new knowledge, also produces trained scientists and engineers of the future."

"Participate with the private sector in precompetitive research on generic, enabling technologies that have the potential to contribute to a broad range of government and commercial applications."

In discussing the transfer of federally funded technology to the private sector and ensuring closer collaboration among industry, federal laboratory, and university personnel, the policy statement proposes two goals that build on previous federal government efforts in technology transfer:

"Improve the transfer of Federal laboratories' R&D results to the private sector. Where appropriate, these laboratories should give greater consideration to potential commercial applications in the planning and conduct of R&D, and these efforts should be guided by input from potential users. To achieve this goal, there must be a closer working relationship among these laboratories, industry, and universities."

"Promote increased industry-Federal laboratory-university collaboration, including personnel exchanges, to help convert Federally-supported R&D into new technologies that the private sector can then turn into commercial products and processes."

OSTP's technology policy statement should be supported. What is now required as the next step is a strategy to implement this policy. The end of World War II was a critical time for the country to establish the science base, strategy, and organizational mechanisms that would enable it to remain at the leading edge of scientific research. Today, the end of the Cold War, increasing international competition, and the need to accelerate the economic growth of the U.S. should spur a long overdue effort to put in place a technology strategy for the country and to establish the implementing mechanisms needed to return and keep America on the leading edge of technology and manufacturing.

Generic Technologies

"This administration is also committed to working with [industry] in the critical pre-competitive development stage where the basic discoveries are converted into generic technologies that support both our economic competitiveness and our national security."

(President Bush, March 7, 1990)¹⁰

Since World War II, the federal government has accepted its role as a supporter of basic research. But over the years the government has been ambivalent about taking a proactive role in providing financial support for generic technologies except in areas, such as defense, where the government is the principal customer. We can no longer afford to be ambivalent. Rapidly growing technological complexity, increasing uncertainties, long lead times, and reduced market shares have increased costs and decreased profits for many U.S. firms. These circumstances militate against commercial firms investing sufficiently in generic technologies, and the indications are that these pressures will only increase. Meanwhile, the benefits of targeted and publicly financed strategic technology programs abroad continue to accrue to our foreign competitors. These programs—in Japan and Europe—have reduced the risks associated with technology and product development and those associated with investment in capital, taken advantage of a limited skillbase, and assured long-term government support for our competitors as well.

Numerous reports have been released recently describing technologies that are termed "generic," "enabling," "strategic," "emerging," or "critical." The Department of Defense, the Department of Commerce, the Computer Systems Policy Project, and the Aerospace Industries Association have produced lists, and OSTP and the Council on Competitiveness are about to do so as well. These lists have been assembled by a wide range of scientists, engineers, and leading industrialists, and yet they are remarkably consistent in the kinds of technologies identified as critical to America's economic and national security and to its ability to compete in the global marketplace, as well as in their assessments that the country is losing its technological leadership in the world.

The Department of Commerce report, released in the spring of 1990, identifies 12 emerging technologies with a combined U.S. market potential of about \$350 billion in annual product sales by the year 2000 and a world market of

about \$1 trillion.¹¹ However, competition from the world's other two economic powers—Japan and the EC—is strong. This study indicates that, if current trends continue, before the year 2000 the United States could lag behind Japan in most emerging technologies and it could trail the EC in several.

What is meant by the term "generic"? And, what does the Administration mean when it talks about "precompetitive R&D"? In a recent address, D. Allan Bromley, the President's Science and Technology Advisor, defined these terms as follows:¹²

"A generic technology is simply one that has the potential to be applied to a wide variety of products and processes extending across many industries. A generic technology is typically not something that is sold commercially. Rather, it requires subsequent research and development, generally by the private sector, to result in commercial application."

"Precompetitive refers to a particular part of the innovation process. It applies to activities before the point at which a company can tell whether a specific technology has commercial potential. It would not apply, for example, to the development of application-specific commercial prototypes."

Generic technologies are not related to narrow market sectors; rather, they often span entire industries or even multiple industries and market sectors. Generic technology stops short of design and development of particular products for the commercial marketplace. By the same token, precompetitive investments are not related to specific products; they are aimed at the development of common tools and technologies that will be used later in a variety of applications. Generic, enabling technologies include advanced materials, biotechnology, engineering and production technologies, information technologies, semiconductors, robotics, and artificial intelligence. These are prominent among the technologies that will fuel economic growth in the 1990s and beyond. It should be noted that the generic technologies of the twenty-first century are much more complex, more multidisciplinary, and more costly to develop than those on which our twentieth century technology has been based.

The rationale for federal government support of generic technology development is similar to the one that guides basic research investment: generic technologies require government support because of the high risks and high costs involved in the research and because no one firm can capture a return sufficient to justify the investment. Since the results of research and development on generic technologies diffuse rapidly to competitors at home and abroad, assuring adequate R&D investment in them requires a combination of industrial funds and government support.

Realizing benefits to the U.S. economy from government investments in generic technology requires that the private sector and universities be closely linked to government-supported generic technology development if commercial

application is to follow in the United States. This implies two related implementation steps. First, we must strengthen technology transfer mechanisms both between the public and private sectors and within each sector. Second, we must manage and utilize all of our scientific and engineering resources—including those in industry, the universities, and our more than 700 federal laboratories—to the maximum possible advantage in the collaborative development of generic technologies.

Several vehicles exist to put such collaborative partnerships in place. One such vehicle is the Advanced Technology Program (ATP), which was created by the 1988 Omnibus Trade and Competitiveness Act to assist U.S. industry to carry out R&D on precompetitive, enabling technologies. The ATP is a Department of Commerce program administered by the National Institute of Standards and Technology (NIST).

Another vehicle is the establishment of industry-government consortia such as SEMATECH. For years the Japanese semiconductor industry has recognized the advantages of cooperation in the precompetitive phases of R&D. By contrast, U.S. industry has been characterized by relationships that are mostly adversarial. Because U.S. firms have acted independently, each company is burdened with the full costs of advancing all aspects of new technologies. In an era of rapidly increasing costs of technology development, independent and duplicative efforts hinder competitiveness. The U.S. semiconductor industry has been late to recognize the advantage of such cooperative research efforts and American firms have only recently organized to pool their resources. One result is SEMATECH, a government-supported industry consortium dedicated to improving semiconductor manufacturing technology.¹³

Recently, the Administration has adopted the goal of maintaining the technology base of the country, at least in part, through the federal government's support of generic technologies at the precompetitive stage. It has issued a technology policy document and made public remarks to that effect, but it has yet to take the strategic implementation steps necessary to accomplish this. The first step is for the federal government, together with industry, to develop a joint technology strategy. This strategy does not involve the government in picking "winners and losers." The basic choices of which products to develop and when remain within the private sector, backed by private money and disciplined by the marketplace. Instead, the strategy must encourage the creation of collaborative coalitions between governments at the federal and state levels (including the vast resources at our national laboratories), industry, and universities to develop a small number of generic technologies that are of strategic importance to the U.S. economy now and in the future.

Towards a U.S. Technology Strategy

"The United States is not used to designing national strategies for helping its industries catch up with dominant producers in the rest of the world."

(MIT Commission on Industrial Productivity, 1989)¹⁴

Over the past decade, the problems of U.S. competitiveness and the role of technology have been studied by a wide variety of groups. These include President Reagan's Commission on Industrial Competitiveness, the Council on Competitiveness, the Computer Systems Policy Project, the National Academy of Engineering, the MIT Commission on Industrial Productivity, the National Association of Manufacturers, the Defense Science Board, and, more recently, the National Advisory Committee on Semiconductors, the Vice-President's Council on Competitiveness, the White House Office of Science and Technology Policy, and the Congressional Office of Technology Assessment. Their reports and studies all give voice to four consistent components that must be included in an effective strategy:

- Reverse the continuing loss of the U.S. technology base
- Identify and invest in strategic, generic technologies
- Speed-up the commercialization of new technologies
- Enhance collaboration between the public and private sectors, and within these sectors.

Although the primary responsibility for civilian technology development and commercial application lies with the private sector, the federal government can and should play a more proactive, participative role in these processes than it has traditionally. The National Academy of Engineering's statement on "Technology and Competitiveness" correctly proposed that in this critical time of global competition, the government, working collaboratively with industry and the universities, "must assume more responsibility for the national civilian technology base in those areas of technology where industrial incentives or motivation are inadequate to meet the needs of the economy as a whole."¹⁵

For the government to assume this responsibility is a departure from the past. Traditionally, the government has felt an obligation to provide the principal support for the nation's science base, but not its civilian technology base.

The result of this policy position has been that the government has put more emphasis on basic research than on technology transfer and the commercialization of new technologies. As the OSTP report indicates, this is no longer a tenable position: if it is to regain its competitive edge in manufacturing, the United States cannot simply be content to dominate the basic research part of the technological innovation process without taking steps to reap the benefits of this investment in the marketplace. The release of this report and the planned establishment of the Critical Technology Institute by OSTP is evidence that our attitudes are beginning to change. But much more must occur before we can be satisfied that we have indeed a viable approach to our technology base.

Addressing the four steps identified above suggests the following implementation steps.

REVERSE THE CONTINUING LOSS OF THE U.S. TECHNOLOGY BASE

Leadership

Our nation's technological leadership is being tested and challenged in the global marketplace every day. The science and engineering enterprise has been called on in the past to address problems of extreme complexity and national importance, such as development of the atomic bomb during World War II, the design and building of the interstate highway system in the 1950s, and the Apollo program during the 1960s. Circumstances outside the research system drove the extraordinary scientific and technological accomplishments in these instances. Today, new, and in some ways more pervasive and threatening, challenges face the nation—sustaining U.S. economic growth and our technological pre-eminence, and stemming the erosion of the manufacturing sector.

National security is no longer a purely military concern. Economic security has become a vital consideration and the strategic importance of technology can be a significant contributor to America's future growth and competitiveness. To get this important message out to American citizens, President Bush should include his support for the newly issued "U.S. Technology Policy" and should articulate the need for an industry-government technology strategy—as well as the implementation steps outlined below—in an appropriate message to Congress and to the American people. The President should also address the need for a continuing industry-government dialogue at the highest levels of government to address strategic issues in science and technology.

Rebalancing R&D Expenditures

While a case can be made for additional R&D funding, the present R&D budget needs to be scrutinized for reallocation and priority setting in order to make our current investments in the nation's science and technology base more effective. Today, over 60 percent of the U.S. R&D budget is allocated to

defense-oriented R&D. Since defense-oriented R&D is not the precursor to civilian technology development that it has been in the past, there is a need to introduce greater balance between civilian and defense R&D by moving towards a more equal division of expenditures. Such a division of resources would enable the U.S. to achieve levels of R&D spending on the civilian side of the ledger more comparable to those of our major foreign competitors. One mechanism for attaining this more effective division of R&D funds is to ensure full public and private sector utilization of the vast resources found in the federal laboratories by involving them in the development of civilian-oriented generic technologies, rather than in development of defense-oriented technology.

IDENTIFY AND INVEST IN STRATEGIC, GENERIC TECHNOLOGIES

Support for Generic Technologies

Government must play a larger role in ensuring that the United States has the technology necessary to support our economy and promote manufacturing competitiveness. As was discussed earlier, NIST's newly implemented Advanced Technology Program is one step on the road towards government/industry collaboration in the development of generic technology. But much more is needed. It is striking that after all the reports and analyses are made, a few areas of technology come to the top of the priority list over and over. They are

- Electronic technologies
- Biotechnology
- Information technologies
- Manufacturing and process technologies
- Advanced materials technologies

These generic technologies are among those that are of prime importance to the future of American manufacturing and to the United States' technological leadership in the world. As an experiment, the federal government should redirect the missions of a small number of government/national laboratories so that, through joint industry funding and management, they could become the nuclei of generic, precompetitive technology efforts.

The 1992 Budget Proposals

Congress should support the President's FY 1992 initiatives in science and technology, including the high-performance computing and networking initiative, the embryonic initiative in materials technology and processing, and the manufacturing technology efforts in NIST, NSF, DOE, DOD, and other agencies. Congress and the Administration should also press forward with an imaginative education and human resource initiative to provide leadership to stimulate

upgrading the skilled workforce American industry needs to handle tomorrow's advances in science and technology.

R&D Tax Credit

Congress should make the R&D tax credit fully applicable to R&D related to manufacturing processes, which it is not today. In addition, the tax credit should be made permanent so that companies can plan their R&D expenditures ahead of time and use this economic incentive more effectively. Finally, Congress should make special provisions for investments by firms in industry-government consortia and in academia as a means of enhancing the private sector's participation with government in the development of generic, enabling technologies. These actions would constitute first steps towards a much needed integration of economic policy and technology policy.

SPEED UP THE COMMERCIALIZATION OF NEW TECHNOLOGIES

The Role of the Federal Laboratories

The federal government operates more than 700 laboratories with an annual budget of approximately \$21 billion—three-fifths of which goes towards defense applications. This amount is almost one-third of the government's R&D expenditures and nearly one-sixth of the nation's total. As military budgets decline, many government laboratories must find new missions or go out of business. Many already have no well-defined mission.

Although Congress adopted several laws in the 1980s to encourage the commercialization of federal laboratory technology and to promote technology transfer from the federal laboratories to the private sector, collaboration between laboratories and industrial firms has been modest at best. Our national laboratories are an underutilized resource in our quest for economic growth. They must become an effective, strategic resource.

Some government laboratories, or specific divisions or projects of a single laboratory, should be redirected to support industrial coalitions aimed at creating leadership positions in generic technologies. Within these coalitions, industries and the laboratories would collaboratively agree on project content, and both would provide financial, technical, and human resources.

Getting industry involved in working collaboratively with government to develop generic technologies will positively affect the outcome of R&D by applying a market test to the tasks and their execution. Such collaborative ventures would also reduce federal funds that are now devoted to the laboratories and make those funds available for other civilian R&D efforts.

ENHANCE COLLABORATION BETWEEN THE PUBLIC AND PRIVATE SECTORS

Collaborative Mechanisms and Technology Transfer

Developing collaborative mechanisms for technology transfer between the public and private sectors, and within each sector, is fundamental to the effectiveness of any technology strategy. Any viable strategy for technology must include vehicles to promote the collaboration of government with industry and the universities and multi-company collaboration among U.S. industrial firms. In order to make collaborative efforts between industry-government and university-industry work, American firms must supplement such collaborative efforts with in-house activities that are complementary to external ones so that they can rapidly take advantage of the outcomes of collaborative efforts.

Such "partnerships" can take a variety of forms. One such vehicle is the formation of industry-government consortia. SEMATECH, in the area of semiconductor manufacturing, is one example of this kind of joint venture. Another mechanism for facilitating closer collaboration between sectors is the National Science Foundation-supported Engineering Research Centers (ERCs) and Science and Technology Centers (STCs). These centers were established to foster close partnerships between universities, industry, and the government on industrially relevant interdisciplinary science and engineering research and education.

Another mechanism that has been tried in various forms includes multi-company industry efforts like the Microelectronics and Computer Technology Corporation (MCC) and the Semiconductor Research Corporation (SRC). Another mechanism that has been tried to increase collaborative technology development and deployment is the establishment by NIST of three regional Manufacturing Technology Centers. These centers are charged with helping small businesses improve their productivity through the transfer and application of new manufacturing tools and methods. Two additional centers are planned for 1991.

Support for State and Local Initiatives in Science and Technology

Over the past two decades, state and local governments have come to see science and technology programs as keys to economic development. Following the examples of California's Silicon Valley, Boston's Route 128, and North Carolina's Research Triangle Park, many states have adopted active technology-based development strategies. These programs vary from state to state, but generally include funding for advanced technology research centers—sometimes referred to as "centers of excellence," seed and venture capital funds, technical assistance, incubators, research parks, R&D grants, and information dissemination and technology transfer. The federal government should actively support these efforts and coordinate its activities with state program developers and clients.

REFERENCES

1. V. Bush, *Science—The Endless Frontier*, A Report to the President on a Program for Postwar Scientific Research (July 1945). Reprinted by the National Science Foundation, Washington, D.C., 1990.
2. Executive Office of the President, Office of Science and Technology Policy, *U.S. Technology Policy* (Washington, D.C., September 26, 1990).
3. R. M. White, "Technology Policy in an Interdependent World," Address to the American Association for the Advancement of Science, Washington, D.C., April 13, 1990.
4. G. Bush, "Remarks by the President to the American Electronics Association," Washington, D.C., March 7, 1990.
5. M. L. Dertouzos, R. K. Lester, R. M. Solow, and The MIT Commission on Industrial Productivity, *Made in America: Regaining the Productive Edge* (The MIT Press, Cambridge, Mass., 1989).
6. Council on Competitiveness, *Picking Up The Pace: The Commercial Challenge to American Innovation*, p. 2 (Washington, D.C., 1988).
7. V. Bush, *Science—The Endless Frontier*, A Report to the President on a Program for Postwar Scientific Research (July 1945). Reprinted by the National Science Foundation, Washington, D.C., 1990.
8. U.S. Department of Commerce, Technology Administration, *Emerging Technologies: A Survey of Technical and Economic Opportunities* (Washington, D.C., Spring 1990).
9. Executive Office of the President, Office of Science and Technology Policy, *U.S. Technology Policy* (Washington, D.C., September 26, 1990).
10. G. Bush, "Remarks by the President to the American Electronics Association," Washington, D.C., March 7, 1990.
11. U.S. Department of Commerce, Technology Administration, *Emerging Technologies: A Survey of Technical and Economic Opportunities* (Washington, D.C., Spring 1990).
12. D. A. Bromley, "U.S. Technology Policy: The Path to Competitiveness," Address to the Technology 2000 Meeting, Washington, D.C., November 27, 1990.
13. National Advisory Committee on Semiconductors, *A Strategic Industry at Risk*, (Washington, D.C., November 1989).
14. M. L. Dertouzos, R. K. Lester, R. M. Solow, and The MIT Commission on Industrial Productivity, *Made in America: Regaining the Productive Edge* (The MIT Press, Cambridge, Mass., 1989).
15. National Academy of Engineering, "Technology and Competitiveness: A Statement of the Council" (Washington, D.C., January 1989).

NATIONAL ACADEMY PRESS

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"CORRESPONDENCE TRACKING"

TYPE: INFORMATION

DOCUMENT NUMBER: 9121102

FROM: PRESS, Frank: NATIONAL ACADEMY OF SCIENCES

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 04/10/91

SUBJECT: LETTER TO JOHN ARMSTRONG CONCERNING THE CONFLICT OF
INTEREST GUIDELINES FOR THE AAAS-SLOAN EXECUTIVE
BRANCH SCIENCE & ENGINEERING FELLOWSHIP PROGRAM.

ASSIGNED TO:

ACTION REQUIRED:

SENDER'S DUE DATE:

OSTP DUE DATE:

DATE COMPLETED:

COPIES TO: D. Allan Bromley
Michelle Van Cleave
Dr. Phillips

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS:

DATE RECEIVED: 04/15/91

FILE: INDUSTRIAL

912102

NATIONAL ACADEMY OF SCIENCES

2101 CONSTITUTION AVENUE, NW WASHINGTON, D. C. 20418

OFFICE OF THE PRESIDENT

April 10, 1991

Dr. D. Allan Bromley
Assistant to the President
for Science and Technology
Director, Office of Science
and Technology Policy
Room 360, OEOB
Washington, D.C. 20506

Dear Allan:

The enclosed correspondence with John Armstrong should interest you.

Yours sincerely,



Frank Press
President

Enclosure

NATIONAL ACADEMY OF SCIENCES

2101 CONSTITUTION AVENUE, NW WASHINGTON, D. C. 20418

OFFICE OF THE PRESIDENT

April 10, 1991

Dr. John A. Armstrong
Vice President for Science and Technology
Corporate Headquarters
IBM Corporation
Armonk, New York 10504

Dear John:

This is what we have been able to find out. I am
sending it over to the White House.

Best regards.

Yours sincerely,


Frank Press
President

Enclosure

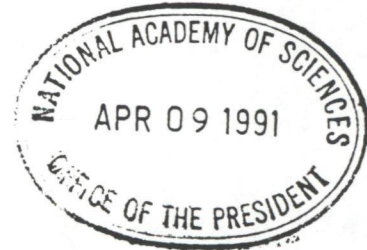
NATIONAL ACADEMY OF SCIENCES

2101 Constitution Avenue Washington, D.C. 20418

April 9, 1991

MEMORANDUM

TO: Frank Press
FROM: James R. Wright *JRW*
SUBJECT: AAAS - Sloan Fellows



The conflict of interest guidelines for the AAAS-Sloan Executive Branch Science and Engineering Fellowship Program are new with the Bush Administration. They apparently are derived primarily from Section 208 of Title 18 of the U.S. Code.

Section 208(a) generally provides, in part, that except as otherwise authorized by the Government, a Government employee may not participate personally and substantially as a Government employee in a "particular matter" (e.g., in a judicial or other proceeding, application, request for a ruling or other determination, contract, claim, controversy, charge, accusation, arrest) in which, to his knowledge, he has a financial interest. The term "financial interest" may be the interest of the employee himself or his spouse, minor child, general partner, organization in which he is serving as officer, director, trustee, general partner, or employee, or any person or organization with whom he is negotiating or has any arrangement concerning prospective employment.

The letter from John Armstrong refers to a prohibition on "all forms of compensation from their employer during the tenure of the fellowship, including pension or insurance contributions..." It's interesting to note that another section of Title 18 of the U.S. Code, Section 209, which specifically prohibits such salary supplements, does not apply to a Government employee serving without compensation (see Section 209(c)). This may be significant since it's my understanding that the AAAS-Sloan Fellows are compensated by AAAS, not the Government. Even when Section 209 does apply, it does not prohibit continuing participation in a former employer's bona fide pension or welfare benefit plan (see Section 209(b)). But OSTP seems to have largely ignored Section 209 and instead adopted a fairly conservative interpretation of the applicable conflict of interest restrictions based primarily upon the "financial interest" restriction of Section 208.

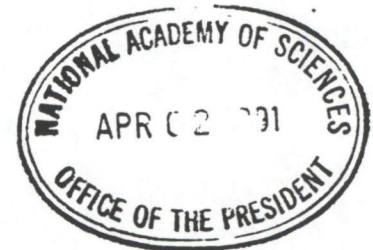
cc: Larry McCray

International Business Machines Corporation

Office of the Vice President for Science and Technology
Corporate Headquarters

Armonk, New York 10504

March 25, 1991



Dr. Frank Press
President
National Academy of Sciences
2101 Constitution Avenue, NW
Washington, DC 20418

Dear Frank:

This letter is to follow-up on our recent conversation about what I believe are serious impediments to closer cooperation between industry, universities, and government on matters of industrial competitiveness. Neither technology transfer nor coordination of policies between these sectors is possible without the appropriate exchange of people, often on temporary assignments. However, just as this matter is becoming more urgent, it is my perception that it is becoming more difficult in practice to create such exchanges.

The example that finally led to this letter is the following. As you know, there is a new program called the AAAS-Sloan Executive Branch Science and Engineering Fellowship Program. The aim of the program is to provide "Fellows [who] will work in the White House OSTP for one or two years ... providing expertise in industrial R&D, technology transfer, international competitiveness, and related issues." As I mentioned, I was approached by an outstanding candidate from industry, agreed with his request for a letter of recommendation, and then was as dismayed as he was to receive only then the Conflict of Interest guidelines of this new program. It includes the following statement: "Fellows who are employed by a for-profit business or industry must forego all forms of compensation from their employer during the tenure of the fellowship, including pension or insurance contributions ..."

Dr. Frank Press
Page 2
March 25, 1991

Regardless of the reasons for such a provision, it guarantees in practice that the group of industrial scientists with the most to contribute will disqualify themselves from making such contributions. There must be a way to combine appropriate safeguards for the public interest with a less draconian insistence on personal sacrifice.

Perhaps there is misunderstanding or misinterpretation of the relevant rules; I believe it would be helpful for the Academy to look into the matter.

Sincerely,

A handwritten signature in black ink, appearing to read 'John A. Armstrong', written over the printed name.

John A. Armstrong
Vice President for Science and Technology

JAA:naw

"CORRESPONDENCE TRACKING"

TYPE: ACTION

DOCUMENT NUMBER: 9121091

FROM: HAMMON, Denise A.: WENTWORTH INSTITUTE OF TECHNOLOGY

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 04/08/91

SUBJECT: REQUEST TO ANSWER A QUESTION CONCERNING WOMAN IN
TECHNOLOGY.

ASSIGNED TO: Dr. Phillips

ACTION REQUIRED: AS NECESSARY

SENDER'S DUE DATE: OSTP DUE DATE: 04/26/91

DATE COMPLETED: 6/11/91

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS:

DATE RECEIVED: 04/12/91

FILE: Industrial
TECHNOLOGY

may
also,
9120678
reassigned
to WDP.
6/7.

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20506

June 11, 1991

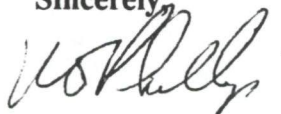
Dear Ms. Hammon:

Thank you for the very timely question you posed in your letter to Dr. Bromley concerning the apparent lack of progress by women "in the field of technology." He has asked me to respond. This topic continues to be of concern. It was discussed very eloquently in a May 21, 1991 article by Natalie Angier in the New York Times entitled "Women Swell Ranks of Science, But Remain Invisible at the Top."

I also would like to refer you to a January 1990 report, "Science and Engineering Personnel: A National Overview," by the National Science Foundation (Special Report, NSF-90-310). They found that women have made substantial gains in science and engineering (S/E) employment over the last decade, but still remain under represented. Women scientists and engineers represented about 13 percent of the S/E workforce in 1986, up from 8 percent in 1976. This trend is likely to continue in the future since women, ethnic minorities, and older students are a rising proportion of all undergraduate college students. Women do account for a larger percent of the workforce in science, 26 percent, than in engineering, 4 percent. The NSF report does not offer an explanation of why this is the case, but it is generously footnoted and may be a resource for your master's thesis research.

Good luck with your graduate studies.

Sincerely,



William D. Phillips
Associate Director for Industrial Technology

Enclosure

Ms. Denise A. Hammon
Research Assistant to the
Vice President of Student Affairs
Associate and Bachelor Degree Programs
Wentworth Institute of Technology
550 Huntington Avenue
Boston, Massachusetts 02115

9121091



RECEIVED

Wentworth
Institute of Technology

91 APR 12 AM 11:53

OFFICE OF THE
DIRECTOR April 8, 1991

D. Allan Bromley, Ph.D.
Science Advisor to the President
of the United States of America
Office of Science and Technology Policy
Washington, D.C. 20506

Dear Dr. Bromley:

During your recent visit to Wentworth Institute of Technology, time ran out during the symposium and I was unable to ask you my question. I would appreciate if you, or a member of your staff, would be so kind as to consider my question at this time.

QUESTION: Over the past ten to fifteen years, women have made significant progress in the previously male-dominated occupations of specialized medicine, law, and economics, but not in the field of technology.

It seems to me that many of the reasoning and aptitude skills required for these other occupations are also required for technology. Can you attribute the slow-to-start progress women have made in this field to a particular factor or set of circumstances?

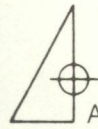
My personal interest in this question stems from my current master's thesis proposal on the sociological aspects of women in aviation technology. I would appreciate any consideration you may be able to give my question.

Thank you for visiting our campus. Your presence made our special day even more memorable.

Sincerely,

Denise A. Hammon

Denise A. Hammon
Research Assistant to the
Vice President of Student Affairs



"CORRESPONDENCE TRACKING"

TYPE: REQUEST FOR MEETING DOCUMENT NUMBER: 9120991

FROM: MORIARTY, Thomas W.

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 04/01/91

SUBJECT: REQUESTS 15-20 MINUTES TO DISCUSS DR. BROMLEY'S
COMMENTS IN OCTOBER'S ISSUE OF "SPECTRUM", AS THEY
RELATE TO HIS OWN CAREER EFFORTS.

ASSIGNED TO: INDUSTRIAL

ACTION REQUIRED: AS APPROPRIATE

SENDER'S DUE DATE: OSTP DUE DATE: ~~04/05/91~~
5/16/91

DATE COMPLETED: 6/19/91

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #: CONTACT PERSON:

REMARKS: Thomas Moriarty will be calling 04/05/91 to determine if a time
can be arranged. Marian left a message for Moriarty but did not
get a response. This has been reassigned to Phillips.

Sent letter. 6/19

DATE RECEIVED: 04/03/91

FILE: INDUSTRIAL
TECHNOLOGY

9/20991

RECEIVED

91 APR 3 P 5: 07

6710 Hallwood Avenue
Falls Church, VA 22046

April 1, 1991

OFFICE OF THE
DIRECTOR

The Honorable D. Allan Bromley
Assistant to the President
for Science and Technology
17th and Pennsylvania Avenue, NW
Suite 358
Washington, D.C. 20506

Dear Mr. Bromley:

I enjoyed reading your comments in October's Spectrum on the state of technological research and development in this country and abroad, and am writing to find out more about the successful merging of R&D and commercial considerations. You see, I am one of those financial managers controlling product development you mentioned. By the same token, I have continued my education after graduate business school with courses in physics and have to say that I agree with the position that short term financial success in the marketplace may lead to a dearth of new product development as a result of underfunded basic research.

The purpose of this letter, frankly, is to ask your advice regarding my own career efforts. Given my strong academic and broad employment experience in project management, accompanied by my interest in being involved in leading edge technology development, I am determined to be part of the solution, not the problem. My goal is to find a forward thinking organization that, as in the German and Japanese examples you cited, recognizes how important it is to broadly educate its decision makers. Between your experiences at Yale and here in Washington, you would seem a unique source of information.

Realizing that your schedule is already filled to capacity, I still venture a request for 15-20 minutes to allow you to expand upon your comments to Spectrum. I will call your office on Friday the 5th to determine if a time can be arranged. Thank you for your consideration.

Sincerely,



Thomas W. Moriarty

P.S. I am including a resume purely for a general idea of my background.

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
03. Resume	Resume of Thomas W. Moriarty [personal information redacted] (2 pp.)	4/1/91	(b)(6)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: General Science Files
WHORM Cat.:
File Location: Industrial: General [6 of 7] [1991]

Date Closed:	3/10/2010	OA/ID Number:	62034-006
FOIA/SYS Case #:	2005-0336-F	Appeal Case #:	
Re-review Case #:		Appeal Disposition:	
P-2/P-5 Review Case #:		Disposition Date:	
AR Case #:		MR Case #:	
AR Disposition:		MR Disposition:	
AR Disposition Date:		MR Disposition Date:	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20506

June 25, 1991

Dear Mr. Moriarty:

Dr. Bromley has forwarded your letter to me concerning your background and interest in employment at OSTP. My directorate, at this time, does not have a need for a person with your credentials. However, I will keep your resume on file if anything should occur in the near future.

Thank you for your interest in our office.

Sincerely,



William D. Phillips
Associate Director for Industrial Technology

Thomas W. Moriarty
6710 Hallwood Ave.
Falls Church, VA 22046

5/8

Mary,

Please reassign to Dr. Phillips.

Thanks,

Marian

Document Originally
Attached to
Following Page

"CORRESPONDENCE TRACKING"

TYPE: REQUEST FOR MEETING

DOCUMENT NUMBER: 9120991

FROM: MORIARTY, Thomas W.

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 04/01/91

SUBJECT: REQUESTS 15-20 MINUTES TO DISCUSS DR. BROMLEY'S
COMMENTS IN OCTOBER'S ISSUE OF "SPECTRUM", AS THEY
RELATE TO HIS OWN CAREER EFFORTS.

ASSIGNED TO: D. Allan Bromley

ACTION REQUIRED: AS APPROPRIATE

SENDER'S DUE DATE: OSTP DUE DATE: 04/05/91

DATE COMPLETED: -----

COPIES TO: Dr. Phillips

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS: Thomas Moriarty will be calling 04/05/91 to determine if a time
can be arranged.

4/9/91 Left message for Moriarty
did not get a response! m2

DATE RECEIVED: 04/03/91

FILE: TECHNOLOGY

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION

DOCUMENT NUMBER: 9120940

FROM: WHITE, Robert M.: DEPARTMENT OF COMMERCE

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 03/27/91

SUBJECT: LETTERS TO FRANK PRESS AND DR. ROBERT M. WHITE
CONCERNING THEIR INVITATION TO HIM TO BECOME A
MEMBER OF THE MANUFACTURING FORUM. HE ACCEPTS.

ASSIGNED TO:

ACTION REQUIRED:

SENDER'S DUE DATE:

OSTP DUE DATE:

DATE COMPLETED:

COPIES TO: D. Allan Bromley
Dr. Phillips

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS: Cross reference with #9120892.

DATE RECEIVED: 04/02/91

FILE: INDUSTRIAL



9120940 892
UNITED STATES DEPARTMENT OF COMMERCE
The Under Secretary for Technology
Washington, D.C. 20230

RECEIVED

912 APR 90 9:29

OFFICE OF THE
DIRECTOR

Mr. Frank Press
President
National Academy of Sciences
2101 Constitution Avenue, N.W.
Washington, D. C. 20418

Dear Frank,

Thank you for your letter of March 20 and your invitation to become a member of the Manufacturing Forum. I am pleased to accept your invitation to represent the Department of Commerce. I am honored to be asked to serve with such a distinguished group of individuals.

The activities of the Forum are of keen interest to me, and as you know, are closely related to the activities of the Technology Administration.

I look forward to serving on the Manufacturing Forum and, again I thank you for the invitation.

Sincerely,

Robert M. White, Ph.D.

cc: D. Allan Bromley ✓
Ruben F. Mettler
Christopher T. Hill



UNITED STATES DEPARTMENT OF COMMERCE
The Under Secretary for Technology
Washington, D.C. 20230

MAR 27 1991

Dr. Robert M. White
President
National Academy of Engineering
2101 Constitution Avenue, N.W.
Washington, D. C. 20418

Dear Bob,

Thank you for your letter of March 20 and your invitation to become a member of the Manufacturing Forum. I am pleased to accept your invitation to represent the Department of Commerce. I am honored to be asked to serve with such a distinguished group of individuals.

The activities of the Forum are of keen interest to me, and as you know, are closely related to the activities of the Technology Administration.

I look forward to serving on the Manufacturing Forum and, again I thank you for the invitation.

Sincerely,

Robert M. White, Ph.D.

cc: D. Allan Bromley ✓
Ruben F. Mettler
Christopher T. Hill

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION

DOCUMENT NUMBER: 9120944

FROM: WIDDER, Robert I.: BATTELLE

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 03/27/91

SUBJECT: A COPY OF BATTELLE'S 1991 R&D FORECAST, PER BILL
WELLS SUGGESTION.

ASSIGNED TO:

ACTION REQUIRED:

SENDER'S DUE DATE:

OSTP DUE DATE:

DATE COMPLETED:

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS:

DATE RECEIVED: 03/29/91

FILE: *INDUSTRIAL*
TECHNOLOGY



Battelle

... Putting Technology To Work

Advanced Technology Office

Quincy Street Station

4001 North Fairfax Drive

Suite 600

Arlington, VA 22203

(703) 875-3340

(703) 243-5617 (fax)

March 27, 1991

Dr. D. Allan Bromley
Director
Office of Science and Technology Policy
Executive Office of the President
Washington, DC 20506

Dear Dr. Bromley:

Bill Wells suggested that I send you a copy of Battelle's 1991 R&D Forecast, which has just come from the printers and is enclosed. Please call me at (703) 516-7458, if you have any questions.

Sincerely,

Robert I. Widder
Senior Research Scientist

Encl: a/s

"CORRESPONDENCE TRACKING"

TYPE: ACTION

DOCUMENT NUMBER: 9120965

FROM: GANAPATHY, S. Kicha: AT&T

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 03/22/91

SUBJECT: REQUEST TO INTERCEDE AS "INTERESTED GOVERNMENT
AGENCY" BEFORE THE U.S. INFORMATION AGENCY ON BEHALF
OF AT&T BELL LABORATORIES AND DR. ARLENE COLE.

ASSIGNED TO: Dr. Phillips

direct reply

ACTION REQUIRED: FOR DAB SIGNATURE

SENDER'S DUE DATE:

OSTP DUE DATE: 04/15/91

DATE COMPLETED: 4/18/91

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS:

*WDP
4/12 - Ganapathy spoke
to Bob Luby - Of
Bob wants to act on it -
he'll call someone
directly. JB*

*I referred him to Sol Buchsbaum
as the way to get to DAB. OK with him
JB 4/11/91*

DATE RECEIVED: 04/01/91

FILE: Industrial
TECHNOLOGY

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
04a. Letter	To: Allan Bromley From: Kicha Ganapathy Re: Request to Intercede [personal information redacted] (5 pp.)	3/22/91	(b)(6)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: General Science Files
WHORM Cat.:
File Location: Industrial: General [6 of 7] [1991]

Date Closed:	3/10/2010	OA/ID Number:	62034-006
FOIA/SYS Case #:	2005-0336-F	Appeal Case #:	
Re-review Case #:		Appeal Disposition:	
P-2/P-5 Review Case #:		Disposition Date:	
AR Case #:		MR Case #:	
AR Disposition:		MR Disposition:	
AR Disposition Date:		MR Disposition Date:	

RESTRICTION CODES

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P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
04b. Letter	To: Kicha Ganapathy From: Allan Bromley Re: Response to 3/22/91 letter [personal information redacted] (1 pp.)	4/18/91	(b)(6)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: General Science Files
WHORM Cat.:
File Location: Industrial: General [6 of 7] [1991]

Date Closed:	3/10/2010	OA/ID Number:	62034-006
FOIA/SYS Case #:	2005-0336-F	Appeal Case #:	
Re-review Case #:		Appeal Disposition:	
P-2/P-5 Review Case #:		Disposition Date:	
AR Case #:		MR Case #:	
AR Disposition:		MR Disposition:	
AR Disposition Date:		MR Disposition Date:	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
 P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
 P-3 Release would violate a Federal statute [(a)(3) of the PRA]
 P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
 P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
 P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
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"CORRESPONDENCE TRACKING"

TYPE: INFORMATION

DOCUMENT NUMBER: 9120892

FROM: PRESS, Frank and Robert M. White

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 03/20/91

SUBJECT: LETTERS TO THE HONORABLE ROBERT M. WHITE AND DR.
WALTER E. MASSEY INVITING THEM TO BECOME MEMBERS OF
THE MANUFACTURING FORUM.

ASSIGNED TO:

ACTION REQUIRED:

SENDER'S DUE DATE:

OSTP DUE DATE:

DATE COMPLETED:

COPIES TO: D. Allan Bromley
Dr. Phillips

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS:

DATE RECEIVED: 03/25/91

FILE: INDUSTRIAL

9/20892

NATIONAL ACADEMY OF SCIENCES
NATIONAL ACADEMY OF ENGINEERING

2101 Constitution Avenue, Washington, D.C. 20418

RECEIVED

March 20, 1991

91 MAR 25 P 4: 24

OFFICE OF THE
DIRECTOR

The Honorable Robert M. White
Under Secretary of Commerce
for Technology
U.S. Department of Commerce
14th & Pennsylvania, N.W.
Washington, DC 20230

Dear Bob:

In late 1989 the National Academy of Sciences and the National Academy of Engineering jointly established the Manufacturing Forum. The purpose of the Forum is to promote the increased competitiveness of American manufacturing industries through effective working relationships among government, industry, labor, and universities.

The Forum membership of twenty-five persons includes such senior executives as Allan Bromley, Michael Boskin, Jerry Junkins, Don Beall, and James Duderstadt. The chairman of the Manufacturing Forum is Ruben Mettler, retired chairman and CEO of TRW Inc.

We are pleased that you were able to attend the recent meeting of the Forum in January and to present the views of the Department of Commerce, which had been so ably stated by Deputy Secretary Thomas Murrin before his recent departure to academia. Tom has agreed to remain an active member of the Forum, now representing the views of academia.

We should like to invite you to become a member of the Manufacturing Forum. The perspectives of the Department of Commerce are absolutely essential to the deliberations and discussions of manufacturing strategy and policy within the Forum. As a member of the Manufacturing Forum, you would be invited to attend and participate in three or four meetings each year at the National Academy of Sciences.

The active participation of federal officials is essential to achievement of our vision of the Manufacturing Forum, and we are gratified at the considerable commitment that the government members have made to the Forum during its first year.

The Honorable Robert M. White
March 20, 1991
Page 2

To bring you up to date on the charter, membership, activities, and plans for the Manufacturing Forum, enclosed is a copy of a recent Forum status report. If you have questions about the Forum, please contact either of us, Ruben Mettler, or the Forum's executive director, Christopher Hill. We look forward to hearing from you.

Sincerely,



Robert M. White
President
National Academy of Engineering



Frank Press
President
National Academy of Sciences

Enclosure

cc: D. Allan Bromley
Ruben F. Mettler
Christopher T. Hill

NATIONAL ACADEMY OF SCIENCES
NATIONAL ACADEMY OF ENGINEERING

2101 Constitution Avenue, Washington, D.C. 20418

March 20, 1991

Dr. Walter E. Massey
Director
National Science Foundation
1800 G Street, N.W.
Washington, DC 20550

Dear Walter:

In late 1989 the National Academy of Sciences and the National Academy of Engineering jointly established the Manufacturing Forum. The purpose of the Forum is to promote the increased competitiveness of American manufacturing industries through effective working relationships among government, industry, labor, and universities.

The Forum membership of twenty-five persons includes such senior executives as Allan Bromley, Michael Boskin, Jerry Junkins, Don Beall, and James Duderstadt. The chairman of the Manufacturing Forum is Ruben Mettler, retired chairman and CEO of TRW Inc.

We should like to invite you to become a member of the Manufacturing Forum. The perspectives of the director of the National Science Foundation are essential to the Forum's discussions of the fundamental science and technology base on which modern manufacturing rests and of the issues surrounding the quality and adequacy of the human resources that are critical to the success of manufacturing. As a member of the Manufacturing Forum, you would be invited to attend and participate in three or four meetings each year at the National Academy of Sciences.

Erich Bloch played a key role in the initiation of the Forum concept and has made major contributions to it. He continues to serve as an active member. Fred Bernthal ably presented the NSF view during his tenure as Acting Director. The active participation of federal officials is essential to achievement of our vision of the Manufacturing Forum, and we are gratified at the considerable commitment that they and other government members have made to the Forum during its first year.

Dr. Walter E. Massey
March 20, 1991
Page 2

To bring you up to date on the charter, membership, activities, and plans for the Manufacturing Forum, enclosed is a copy of a recent Forum status report. If you have questions about the Forum, please contact either of us, Ruben Mettler, or the Forum's executive director, Christopher Hill. We look forward to hearing from you.

Sincerely,


Robert M. White
President
National Academy of Engineering


Frank Press
President
National Academy of Sciences

Enclosure

cc: D. Allan Bromley
Ruben F. Mettler
Christopher T. Hill

"CORRESPONDENCE TRACKING"

TYPE: ACTION

DOCUMENT NUMBER: 9120829

FROM: HILL, Christopher T.: THE MANUFACTURING FORUM

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 03/19/91

SUBJECT: REQUEST TO REVIEW/COMMENT A DISCUSSION PAPER ON THE
JAPANESE INTELLIGENT MANUFACTURING SYSTEMS PROPOSAL
& ITS IMPLICATIONS FOR GOVERNMENT, INDUSTRY &
UNIVERSITIES

ASSIGNED TO: Dr. Phillips
Thomas Ratchford

ACTION REQUIRED: REVIEW/COMMENT TO
DAB FOR SIGNATURE.

SENDER'S DUE DATE: 04/08/91

OSTP DUE DATE: 04/04/91

DATE COMPLETED: 4/12/91

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS: It is asked that you treat the paper as a confidential draft and
not a final paper for distribution.

Copy of letter & report to TSK/Whyman
on 4/29

DATE RECEIVED: 03/19/91

FILE: Industrial
TECHNOLOGY*INTERNATIONAL

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20506

April 12, 1991

Dear Chris:

I very much enjoyed reading the discussion paper by George R. Heaton, Jr. on International R&D Cooperation: Lessons from IMS. It appears to accurately represent the history of this proposed initiative from its infancy in Japan to the present involvement of the United States and the European Community. Discussion of the contrasting processes and differing government and private sector modes of participation in advancing the IMS proposal in Japan and the United States to its present state are of broad value.

The paper by George Heaton has great merit. One point that I feel could stand somewhat greater emphasis and that clearly emerged in the work sessions conducted by DOC is that the industry and university components of the U.S. private sector have somewhat divergent objectives with regard to IMS. For the former, the objective seems largely to be a window on Japanese manufacturing technologies and processes, and, for the latter, new sources of funding.

Sincerely,



D. Allan Bromley
Director

Mr. Christopher T. Hill
Executive Director
The Manufacturing Forum
National Academy of Sciences
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

bcc: T. Ratchford

9120829

THE MANUFACTURING FORUM

National Academy of Engineering National Academy of Sciences
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

RECEIVED

91 MAR 21 12:33
Telephone: 202/334-1579
FAX: 202/334-2290
BITNET: CHILL@NAS.BITNET

March 19, 1991

OFFICE OF THE
DIRECTOR

Dr. D. Allan Bromley
Director
Office of Science and Technology Policy
17th and Pennsylvania Avenue, N.W.
Washington, DC 20506

Dear Allan:

As you are aware, the Manufacturing Forum, acting in response to expressions of interest by several of its members, has commissioned a discussion paper on the Japanese Intelligent Manufacturing Systems (IMS) proposal and its implications for government, industry, and universities.

We have received an excellent draft of the discussion paper from its author, George Heaton, an attorney and adjunct associate professor at Worcester Polytechnic Institute. Copies of the draft and the work statement are enclosed.

The paper will be discussed at the June 5 meeting of the Manufacturing Forum. However, in order that the paper can be made available in a timely way as the international discussions of IMS go forward, Ruben Mettler and I decided to ask an ad hoc subgroup of the Forum to review and comment on the draft over the next few weeks so that it can be released as early as possible. We are also asking a select group of experts outside the Forum to review it at the same time. A list of the reviewers is enclosed.

It would be perfectly appropriate and quite desirable, in my view, for you to ask other persons in OSTP to review the paper, such as Bill Phillips or Tom Ratchford. We only ask that they treat the paper as a confidential draft and not a final paper for distribution.

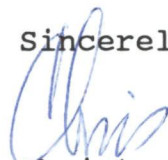
Please send your comments to me at the Manufacturing Forum in whatever form is convenient. I will share your comments with the other Forum members in summary form and with George Heaton in detail.

Dr. D. Allan Bromley
March 19, 1991
Page 2

May I have your response by April 8, 1991? If you are unable to comment, please let me know.

Thank you very much for your help.

Sincerely,

A handwritten signature in blue ink, appearing to read "Chris", is written over the typed name.

Christopher T. Hill
Executive Director

Enclosure

cc: Ruben F. Mettler

MANUFACTURING FORUM

Ad Hoc Group to Review the Draft IMS Discussion Paper

March 19, 1991

Manufacturing Forum Members

Don Beall, Rockwell
Fred Bernthal, NSF
Allan Bromley, OSTP
Jim Gibbons, Stanford
Jerry Junkins, Texas Instruments
Frank Luerksen, Inland Steel
Tom Murrin, Duquesne University
Linn Williams, USTR
Robert White, Dept. of Commerce

Expert Reviewers

Richard Getzinger, Head, AAAS Office of Int'l. Programs
(former US S&T Counsellor, Tokyo Embassy)
Stanley Krueger, United Technologies, Tokyo
Richard McClain, TRW, Tokyo
Denise Mishel, American Electronics Association
Roger Nagel, Prof. of Manufacturing Systems Engr., Lehigh
(former member, Manufacturing Studies Board)
Junichi Nishizawa, Pres., Tohoku University
(Japanese Semiconductor Research Association, Sendai)
William Owczarski, United Technologies, Wash., D.C.
(member, Ad Hoc Industry Group on IMS; chair NAM Tech.
Policy Committee)
Richard Samuels, MIT
(director, MIT Japan Program)
F. Karl Willenbrock, Assistant Director of Science,
Technology and International Affairs, NSF

ABRIDGED
STATEMENT OF WORK

Preparation of Background Paper for the Manufacturing Forum
on
"Principles for International Cooperation in Civilian Technology:
Lessons from the Intelligent Manufacturing Systems Proposal"

The contractor will prepare a paper that identifies one or more sets of principles, criteria, and/or considerations that might guide United States government officials, U.S. manufacturing firms, U.S. universities, and U.S. independent research organizations in participating in international programs of cooperative research and development related to civilian technologies. The paper will describe and draw upon recent U.S. experiences and discussions surrounding the Japanese proposal for an international cooperative research program in Intelligent Manufacturing Systems (IMS).

The paper should address, but need not be limited to, consideration of the following topics and issues.

1. A descriptive summary of the IMS proposal, its history, key events since its introduction, its status, and the nature of the U.S. response by the Federal Government, industry, universities, professional organizations, and manufacturing research consortia. The paper should include a descriptive summary of the existing set of international agreements and obligations that directly affect cooperation in research, development and technology transfer, especially those that affect industrially-related technology and/or those involving the United States and Japan. The paper should also summarize the views of Japanese manufacturing interests regarding the IMS proposal. The summary should provide an authoritative overview that will facilitate an informed discussion of the IMS proposal by the members of the Manufacturing Forum and by other senior leaders in the U.S. manufacturing community.

2. An identification of key policy issues that have been raised about the IMS proposal, including the approach to the U.S. government and other institutions, Federal agencies' responses to the IMS initiative, the nature and implications of international agreements - including but not limited to the U.S./Japan bilateral science and technology agreement - for the IMS proposal, non-governmental organizations' involvement in organizing a U.S. response, U.S. preparedness to initiate and/or respond to international cooperative R&D activities in the civilian industrial realm, the availability of human and financial resources in the United States to participate in the management and the conduct of cooperative international R&D efforts, and the mechanisms of U.S. response to the IMS proposal at each stage.

3. Development of one or more sets of principles for participation in international cooperative industrial R&D programs by U.S. organizations, including government, industry, universities, and others. Such principles would not be intended as legislated or administrative rules of conduct, but rather as concepts and rules of thumb to guide potential participants as well as policymakers responsible for such response and participation. They might address such matters as domestic preparation, mechanisms for domestic coordination, suggestions as to venues for domestic discussions and for participants in such discussions, and constraints and opportunities resulting from international regimes and agreements governing political, trade, and technology relationships. These principles might be useful in discussions of any future international cooperative R&D program proposals, as well as in the on-going discussions of the IMS proposal in the United States. They should be targeted at senior decisionmakers in all relevant sectors, including Federal officials and chief executive officers of firms and universities.

The paper is to take into account extant documentation of the IMS proposal and subsequent events and discussion, and should include consideration of information gained via interviews with key persons associated with the IMS project in the United States and Japan. The paper should also reflect discussions with the Manufacturing Forum members and staff, and the author's personal knowledge of such matters as Japanese government-industry relationships in R&D, U.S.-Japan relations, U.S. research and technology policies, and international affairs. Every effort should be made to reflect authoritatively the views of both proponents and opponents of the IMS project in the United States, including government officials, industrial leaders, and academicians.

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION

DOCUMENT NUMBER: 9120841

FROM: BELDEN, David L.: AMERICAN SOCIETY OF MECHANICAL ENGINEERS, THE

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 03/18/91

SUBJECT: A LETTER TO INFORM THAT HE IS UNABLE TO ACCEPT THE
INVITATION TO MEET WITH DR. BROMLEY AND OSTP STAFF.

ASSIGNED TO:

ACTION REQUIRED:

SENDER'S DUE DATE:

OSTP DUE DATE:

DATE COMPLETED:

COPIES TO: D. Allan Bromley
Dr. Wong
Dr. Phillips

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS:

DATE RECEIVED: 03/22/91

FILE: INDUSTRY*PHYSICAL SCIENCES

9120841



The American Society of
Mechanical Engineers

David L. Belden, Ph.D., P.E.
Executive Director
212-705-7730
FAX 212-705-7739

RECEIVED
345 East 47th Street
New York, NY 10017

91 MAR 22 AIO : 35

OFFICE OF THE
DIRECTOR

March 18, 1991

Dr. D. Allan Bromley
Director
Office of Science and Technology Policy
Executive Office of the President
Washington, DC 20506

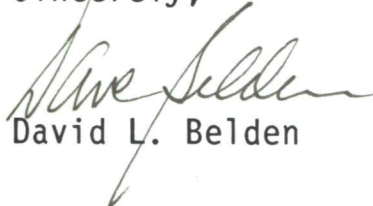
Dear Dr. Bromley:

Thank you for inviting me to meet with you and other senior officials of the Office of Science and Technology Policy. It is my misfortune that I am unable to accept due to an unavoidable schedule conflict.

I am particularly pleased that you are planning this interaction with the executive directors of a number of the engineering societies. ASME's relationship with you and others at OSTP have been positive. ASME truly appreciated your participation in the Industry Advisory Board meeting. Further, we were pleased to prepare the technology policy and critical technologies position papers.

Best wishes for a most successful meeting.

Sincerely,


David L. Belden